

GSPI Algae-To-Biodiesel Phase II Successful

Green Star Products, Inc. announced recently that its Phase II Algae-to-Biodiesel Demonstration Facility (40,000 liters) has been successfully completed.

GSPI's May 11, 2007 press release, titled "Green Star Completes Algae Phase I Demo Facility," explained in detail the five most important operating parameters that need to be controlled. However, management of these parameters has so far eluded the commercial microalgae industry.

These parameters include daily and seasonal pond temperatures, pH, evaporation, salinity and invasion by outside organisms.

Joseph LaStella, president of GSPI, stated, "The GSPI demonstration facility, which is a full-size module of our planned production facility, furnished GSPI with a wealth of field information and patentable low-cost construction techniques."

Phase II testing included pushing the survival environmental envelope of the developed algae strain (zx-13) utilized by GSPI.

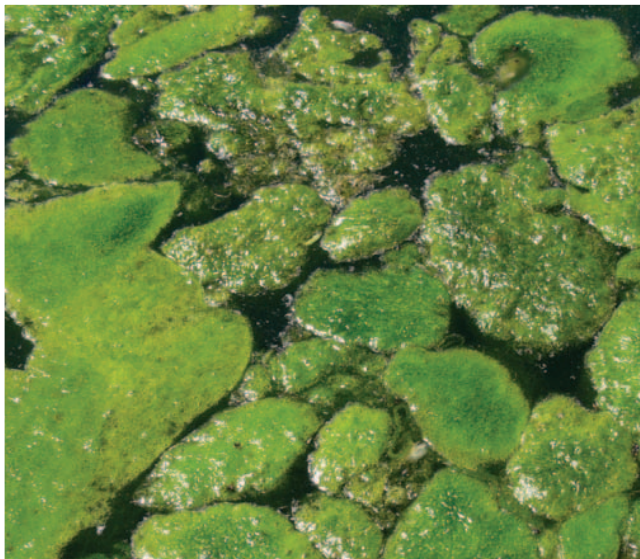
LaStella further stated, "The zx-13 strain survived at elevated temperatures, much higher than any tested in most of the available literature over the last 50 years. Temperature testing by universities usually cuts off at 90 °F, this zx-13 strain successfully endured peak temperatures of 115 °F for several hours on successive days."

Also tested were salinity levels outside the normal operating range for saltwater algae and the zx-13 strain exhibited strong survivability. The zx-13 strain also exhibited acceptable 21% oil content. The balance of the biomass is being tested for high-grade protein content to be used as animal feed and organic fertilizer.

The only item that caught GSPI personnel unprepared was the exponential growth of the algae. LaStella stated that "Growth rates of algae are phenomenal; just consider that many algae, including the zx-13 strain, are capable of reproducing themselves from 1.5 to 4 times per day depending on environmental conditions. This means that, even at nominal growth rates, one cell will grow to one million microalgae cells in 15 days that continue to grow to one trillion cells in the next 15 days if conditions and space

for growth are available."

Algae harvesting occurred sooner than expected and GSPI had not yet received all harvesting equipment. GSPI harvesting techniques allow only the algae cells larger than 2 microns to be captured and the smaller size algae returned to the pond to reproduce.



In an effort to harvest as soon as possible a 1,750 rpm vane pump was used instead of a slurry pump and resulted in shearing and damaging the smaller algae cells returning to the pond, which caused a temporary pond shutdown. LaStella stated: "This is not an operational problem, it's only part of the learning curve."

The success of the Montana demonstration facility has paved the way for the next stage, which is a 100-acre production facility. At the present time GSPI is in negotiations in three states (California, Missouri and Utah) for this 100-acre

facility.

GSPI says that one of the major considerations for its next site is the ability to expand to a much larger facility of 500 to 1,000 acres.

LaStella also re-stated five important algae factors, which will play a major role in weaning the U.S. off foreign oil and reduce global warming. These are:

- 1. Algae produce 100 times more oil per acre than traditional food oilseed crops (i.e. corn, soy, etc.).**
- 2. Algae eat CO₂, the major global warming gas, and produce oxygen.**
- 3. Algae require only sunshine and non-drinkable (salt or brackish) water.**
- 4. Algae do not compete with food crops for either agricultural land or fresh water.**
- 5. Algae can reproduce themselves and their oil every 6 hours, while it takes Mother Nature millions of years to produce crude oil in the ground.**

Industry News

Neste Oil To Buy Rapeseed Oil from Raisio as Biodiesel Feedstock

Neste Oil and Raisio have agreed to a contract under which Raisio will supply 10,000 tons of rapeseed oil to Neste Oil this year for use as a feedstock at its NExBTL (Next Generation Biomass To Liquid) renewable diesel plant at Porvoo, Finland. The plant, which is due to start up this summer, is based on proprietary Neste Oil technology that can use a flexible mix of vegetable oil and animal fat to produce premium-quality biodiesel.

“We are keen to buy feedstock for our Porvoo site from local suppliers whenever this is feasible. In addition to the current deal, we’re also discussing future raw material supply opportunities with Raisio,” said Kimmo Rahkamo, Neste Oil’s executive vice president, biodiesel.

In September last year Neste Oil contracted to buy virtually all the byproduct tallow produced by the Finnish food processing industry as raw material input for its biodiesel production.

The NExBTL plant at Neste Oil’s Porvoo refinery is the first of its type and will have a capacity of 170,000 tons per year. A second, identical plant is being built alongside, scheduled for completion late next year.

In May, Neste saw the inauguration of the new EUR

700 million (\$965 million) diesel production line that had been under construction for the last four years, and a EUR 100 million (\$138 million) biodiesel plant that had been under construction for the last 18 months. The site is also celebrating 40 years of operation at its Technology Center.

“Without our Technology Center, the two other facilities we’re celebrating today wouldn’t exist. Improving production and products in the oil refining business always calls for new technology. Product specifications are getting tougher all the time, and feedstocks becoming more and more challenging to refine. Developing new technologies is an oil refiner’s only way to address these issues successfully,” according to Neste Oil’s president and CEO, Risto Rinne, speaking at the celebration in May.

The new biodiesel plant is the first to produce second-generation biodiesel based on Neste Oil’s proprietary NExBTL technology. According to Neste Oil, NExBTL renewable diesel is a hydrocarbon and offers better product characteristics and engine performance than first-generation biodiesel.

“The fact of the matter is that moving people and goods is an essential part of today’s world. Our duty as an oil company is to produce products that make traffic and transport as clean as human ingenuity and technological development allows,” continued Rinne.



Kimmo Rahkamo