

## Algae into ETHANOL Cheaply

Turning algae into ethanol, and gold June 11, 2008 - Exclusive By Carli Ghelfi, Cleantech Group No ponds, no fresh water, no harvesting, no oils. One algal biofuel company says it's found a way to convert algae directly into ethanol on the cheap.

Is it, in fact, a watershed in biofuels from algae?

Naples, Fla.-based Algenol Biofuels says it has found a way to inexpensively bring third-generation biofuels to industrial scale.

And, unlike most algal biofuel companies, it's apparently got a licensing deal for an \$850 million project to show for it.

The company believes its seawater-based process can generate up to a billion gallons of algal ethanol per year from a facility in Mexico.

"We're not in the biodiesel business, the lipids business or oil business," according to CEO Paul Woods. "We believe we have the most advanced third-generation technology. Our process is completely different."

Algenol claims to use algae, sunlight, CO<sub>2</sub> and seawater in closed bioreactors to produce ethanol, not the biodiesel most conventional algae companies are pursuing.

Woods told Cleantech Group today that because his company does not use freshwater and does not harvest the algae, the process is much less expensive.

"You have to do it cheaply, or you have no process," said Woods.

Woods did not specify how cheap, however.

With a reported 11 years of research and 10 years of patents under its belt, Algenol formally introduced itself and an \$850 million project with Sonora Fields S.A.P.I. de C.V., a wholly owned subsidiary of Mexican-owned BioFields.

The privately-funded company said it is expecting yields of 6,000 gallons per acre per year, and expects to increase that figure to 10,000 by year end.

By contrast, corn yields approximately 360 gallons per acre per year, and sugarcane 890 gallons, according to Woods.

"Basically we can take in 1.5 million tons of CO<sub>2</sub> and convert it into 100 million gallons of ethanol," said Woods.

"We will be the largest consumer of CO<sub>2</sub> on the planet."

The Algenol process occurs in bioreactors that are three-feet by fifty-feet and shaped like soda bottles, said Woods.

According to Woods, during the process, algae consumes sunlight and more than 90 percent of the system's CO<sub>2</sub> through photosynthesis, wherein the sugars are converted into ethanol. The ethanol is immediately pumped out and evaporates into the bioreactor which is captured every night.

"This process overcomes the enormous problems other companies face," said Woods. "We don't use food. We don't use feedstock. We don't use freshwater," emphasized Woods. "All this really helps the cost structure."

When asked why the company, which was founded in 2006, finally decided to reveal itself, Woods said that it was keen on keeping mum while it was bringing the process to scale, which has been a difficult feat in the algal biofuel industry.

Companies like LiveFuels, GreenFuel Technologies, Aquaflow Bionomic, PetroAlgae and others have all experienced ebb and flow when it comes to announcing commercial scale production.

The only other algal biofuel company touting "scale" production is San Francisco-based Solazyme, which, coincidentally, today announced its microalgae-derived fuel has become the first algal-based biodiesel to pass the American Society for Testing and Materials D-975 specifications.

Solazyme had no comment on Algenol's development, but has experienced momentum in commercializing its fuel.

At the beginning of this year, Solazyme said it signed a biodiesel feedstock development and testing agreement with Chevron Technology Ventures (see Solazyme to work with Chevron on algae fuel).

Last summer it announced a similar deal with Seattle-based Imperium Renewables, a company which shelved its planned IPO earlier this year (see Solazyme to supply algae oil to Imperium and Imperium Renewables puts IPO on hold).

Woods said a production facility in Sonora, Mexico is expected to be online at the end of 2009, scaling to an anticipated 1 billion gallons in four-and-a-half years, involving some 3.5 million bioreactors.

The licensing agreement with Mexico's Biofields reportedly involves a deal to sell the ethanol to the Mexican government.

"We're making a significant departure from other technologies because we're making ethanol now, and will be selling it next year," continued Woods.

"I think we will be supplying the cheapest fuel on the planet."

In an effort to make waves with the U.S. government, Woods visited Washington D.C. last week to formally introduce his technology and explain how there are other ways to ethanol than just cellulosic ethanol.

Since its inception in 2006, the privately funded company has seen \$70 million in investments, with zero venture capital money to its name, said Woods.

He explained that the majority of the money comes from the founders, of whom the majority has made successful exits as former CEOs from the natural gas and pharmaceutical industries.