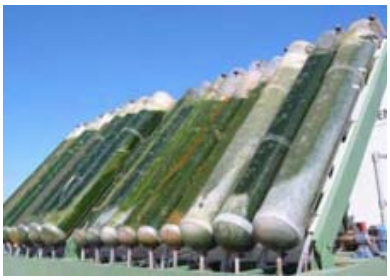
Algae Based Technology Companies



If corn-based biofuels are the Britney Spears of the cleantech world (a fallen star but still all over the place), fuel made from algae is the next great American Idol winner (major potential in the pipeline). And despite the fact that algae-to-biofuel startups have been taking their sweet time bringing a pond scum fuel product to market, some inroads have been made recently — GreenFuel is building its first plant, PetroSun starts producing at their farm on April 1, and big oil Chevron and Shell have made some early bets as well.

As we watch this play out, here are 15 algae biofuel firms that you should know about:

GreenFuel Technologies: The Cambridge, Mass.-based algae firm led by telecom bigwig Bob Metcalfe (whom we interviewed here) has reached an agreement to build its first fuel plant — worth $92 million — in Europe, says Xconomy. It's good news for the firm, which has hit some speed bumps over the past year, including layoffs, switching CEOs, shutting down a greenhouse in Arizona and discovering that its algae tech was more expensive than first planned.

The startup builds algae bioreactor systems, which use recycled CO2 to feed the algae, which is then converted into biofuels; it uses the containers to carefully control the algae's intake of sunlight and nutrients. GreenFuel is backed by Polaris Ventures, Draper Fisher Jurvetson (our video interview with DFJ here) and Access Private Equity and has been working on raising a Series C funding.

Solazyme: The five-year old firm uses synthetic biology and genetic engineering to tweak algal strains for better biofuel yields. Based in South San Francisco, the company grows its algae in fermentation tanks without sunlight, by feeding it sugar. The company is one of the few that have managed to do deals with a major oil company — Chevron — as well as biodiesel maker Imperium Renewables. Backers include Blue Crest Capital Finance and The Roda Group.

Blue Marble Energy: The Seattle-based company finds algae-infested polluted water systems, cleans up the environment, and turns the algae into biofuel. "If the future of biofuels is algae…you're never going to get enough volume in bioreactors or ponds…It has to be something with greater volume," the company told the Guardian . We're not sure how Blue Marble will control the wild algae settings, but it sounds like it could be difficult.

Inventure Chemical: Also out of Seattle, this startup is working on an algae-to-jet fuel product, and told the Seattle PI that it has already created algae-based fuel in 5- to 10-gallon tests and plans to set up a test plant to see if it can produce between from three and 15 million gallons of biofuel each year. Inventure Chemical closed its first round of funding mid-2007, and investors are reported to be biodiesel company Imperium Renewables, Cedar Grove Investments, Brighton Jones Wealth Management and undisclosed angel investors.

Solena: Profiled in the New York Times today, Solena uses high temperatures to gasify algae and other organic substances with high-energy outputs. The Washington state-based company is talking with Kansas power firm Sunflower to build a 40-megawatt power plant run on gasified algae, according to the NYT; the algae would be grown in big plastic containers, and fed by a combination of sunlight and the sodium bicarbonate biproduct of the adjacent coal plant.

Live Fuels: Instead of attempting to convert algae directly into ethanol or biodiesel, this startup is trying to create green crude that could be fed directly through the nation's current refinery system. The Menlo Park, Calif-based startup uses open-pond algae bioreactors and plans to commercialize its technology by 2010. Investors include the Quercus Trust (David Gelbaum's well-known environmental funding group) and Sandia National Labs.

Solix Biofuels: Like Live Fuels, Solix is also working on a biocrude, but using a closed-tank bioreactor set-up. Based in Fort Collins, Colo., and founded in April 2006, the firm is backed by Colorado State University's Engine and Energy Conversion Laboratory. The company has said that construction will begin shortly on its first, large-scale bioreactor at the nearby New Belgian Brewery, where CO2 waste produced during the beer-making proicess will be used to feed the algae.

Aurora Biofuels: Developed at the University of California at Berkeley, the company is using genetically modified algae to efficiently create biodiesel. The Aurora claims the technology, developed by microbial biology professor Tasios Melis, can create biodiesel fuel with yields that are 125 times higher and have 50 percent lower costs than current production methods. According to the company's web site, backers include Gabriel Venture Partners, Noventi, Oak Investment Partners (and angel investors include Auttomatic CEO Toni Schneider)

Aquaflow Binomics: The New Zealand company's goal is to become "the first company in the world to economically produce biofuel from wild algae harvested from open-air environments." Like Blue Marble Energy, the three-year-old startup sources its algae from algae-infested polluted water systems, cleaning the polluted environment in the process.

Late last year, publicly held Aquaflow used its algae-based biodiesel to run a Land Rover driven by New Zealand's Minister of Climate Change. And it's been working with Boeing on algae-to-bio-based jet fuel.

Petro Sun: This company is also publicly held, but we thought it was important to include it because they plan to start up their algae-to-biofuel production factory in Rio Honda, Texas, on April 1. The algae farm has 1,100 acres ponds that Petro Sun thinks will make 4.4 million gallons of algal oil and 110 million pounds of biomass per year. Some think the company is just jumping on the algae-slimed bandwagon.

Bionavitas: Based in Snoqualmie, Wash., the company says it has developed technology for the high-volume production of algae using bioreactors. Check out their WIPO patent app for the bioreactor setup.

Mighty Algae Biofuels: The little we do know about Mighty Algae Biofuels we learned through their entrance in the California Cleantech Open last year. We know, for example, that it uses closed bioreactors to grow the algae. They were also quoted in the San Jose Mercury this month on a story about algae biofuel.

Bodega Algae: Another newbee, this one with roots at MIT, the one-year-old firm has developed a set-up to grow algae in bioreactors with light and nutrients that it says is lower cost and more efficient than the current methods. Back in May 2007 Bodega said it was looking for $300,000 for "capital equipment, salaries and testing materials to complete the first prototype and begin a pilot study with a biodiesel manufacturing facility." (Their web site is down, so we'll if they're still around).

Seambiotic: The five-year-old Israeli startup produces algae for applications, including the budding biofuel industry, and is working with Inventure Chemical. The firm has been working with Israeli Electric Company, utilizing IEC's smokestack for a source of CO2 and grows algae in eight open algae ponds.

Cellena: A joint venture created by Hawaiian algae-to-biofuel startup HR Biopetroleum and oil company Shell. Shell has majority share of the company, which is in the process of building a demo facility on the Kona coast of Hawaii.