



**BIOFUELS
IN BRIEF**

**UOP BUILDS BIOMASS
BIOFUEL UNIT IN HAWAII**

US-based UOP, a subsidiary of Honeywell, started construction of a biomass-based biofuels demonstration unit in Kapolei, Hawaii. The biorefinery is scheduled to begin production in 2012 and will be fully operational by 2014.

**PETROBRAS TO BUILD
BRAZIL ETHANOL PLANT**

Oil and chemical company Petrobras and its partner Sao Martinho plan to build a 700m liters/year ethanol plant through a new joint-venture company Nova Fronteira Energia for reals 520.7m (\$306m, €224m). The project will also expand Sao Martinho's crushing capacity at Boa Vista from 2.3m tonnes of sugar to 8m tonnes by 2014–2015 harvest.

**DYNAMOTIVE IN ASIAN
PYROLYSIS OIL MARKET**

Dynamotive and Genting Bio-Oil will explore development of the pyrolysis oil market for the Southeast Asian region. The companies will evaluate possible construction of a commercial biofuel plant including biomass quantification, characterization and evaluation for use in pyrolysis process, biofuel production, and supply chain.

**RSPO AIMS 5M TONNES
OF CERTIFIED PALM OIL**

The Roundtable on Sustainable Palm Oil (RSPO) hit its first 1m hectares (2.5m acres) of certified sustainable palm oil (CSPO) production area in the world. Global CSPO production is now close to 5m tonnes, representing almost 10% of global palm oil production.

**IMPERIAL PETRO IN
GREASE SUPPLY**

Imperial Petroleum will secure a two-year biodiesel feedstock supply from Green Grease Solutions based in New Jersey, US, for Imperial's Middletown, Indiana, biodiesel operations.

ETHANOL DORIS DE GUZMAN NEW YORK

INEOS Bio looks to start US cellulosic ethanol in 2012

Company expects to be the first to commercially produce cellulosic ethanol in the US

INEOS Bio, the bioenergy arm of Swiss-headquartered chemicals company INEOS, expects its joint-venture project INEOS New Planet BioEnergy (INPB) to be the first to commercially produce and market cellulosic ethanol in the US next year. INPB concluded all necessary funding in August to complete the biorefinery construction in Vero Beach, Florida.

The facility, expected to start up in the second quarter of 2012, will produce 8m gal/year (24,000 tonnes/year) of cellulosic ethanol and 6MW/year of renewable power using 150,000 tonnes/year of biomass feedstock such as local yard, vegetative and household wastes. The facility will use INEOS Bio's feedstock-flexible bioenergy technology that uses a combination of gasification and fermentation technology.

"It will be tough [for the DOE] to justify needs for continuous funding given the lack of current capacity"

MARK NIEDERSCHULTE
Chief operating officer, INEOS Bio

Electricity from the facility can provide for 1,400 homes in the area, Mark Niederschulte, INEOS Bio's chief operating officer, said. "We are about 25% completed with the construction and should be finished by April 2012. According to the US Environmental Protection Agency (EPA), we are the only producer that will be in the cellulosic ethanol market next year," Niederschulte added.

He said the plant's output is expected to serve the Florida market. The state of Florida implemented a Renewable Fuels Standard on December 30, 2010 which requires all gasoline sold or offered for sale in Florida by a



INEOS Bio expects to be the only commercial producer in 2012

terminal supplier, importer, blender or wholesaler to contain 9–10% agriculturally-derived denatured ethanol fuel by volume.

"This translates to about 800m gal/year potential ethanol demand for Florida on a scale basis," Niederschulte said. "Florida is an attractive state for biofuels given that this is one of the highest driving states and one of the highest energy consuming states in the country."

The project will cost about \$130m (€95m). INEOS Bio has secured \$75m in financing, backed by a guarantee from the US Department of Agriculture (USDA). The project was also awarded more than \$52m in cost-matching grants.

CELLULOSIC SUPPORT

The cellulosic ethanol industry could face funding challenges next year amid talks of potential cost-cutting measures in government funding and subsidies coming from the US Congress.

Ethanol's 45 cents/gal blender's tax credit and related 54 cents/gal import tariff are scheduled to expire by the end of the year.

Many industry analysts believe subsidies will be eliminated to help trim the government's annual budget deficit and reduce debt. The debate on the viability

of government-funded renewable energy has become heated in the past few weeks as several US solar-panel manufacturers such as Solyndra, Evergreen Solar and SpectraWatt filed for bankruptcy.

Solyndra received a total of \$527m in loans from the Department of Energy (DOE), reportedly the largest recipient in the DOE's solar-funding portfolio.

"With what we are seeing with the Solyndra issue as well as the possibilities of US biofuel subsidies being eliminated, it is going to be tough for the DOE to justify as to why they need to continue to fund renewable energy programs," Niederschulte said.

"Our goal is to change that opinion once we start our plant, but in the meantime it is going to be tough for the defenders of cellulosic ethanol industry to point out the justification of funding support given the lack of capacity available," Niederschulte added that the challenge for cellulosic ethanol commercialization comes two-fold – it takes about 20 years to develop the technology, and the recent economic downturn has slowed infusion of capital.

Still, the Obama administration continues to keep cellulosic biofuels on life-support by promising another \$510m via the DOE, USDA and the Department of



**Middle East
producers climb
back in 2010**
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Navy, to create a public-private partnership to develop drop-in advanced biofuels in a three-year program. The funding, announced in August, is to be matched dollar-for-dollar by private-sector money. Not counting the \$510m deal, the DOE has committed more than \$2bn to cellulosic ethanol development.

DEVELOPMENT STAGES

Last month, the DOE awarded Abengoa Bioenergy a federal loan guarantee of \$133.9m for the construction of its planned 23m gal/year cellulosic ethanol facility in Hugoton, Kansas, expected to begin production in 2013. Abengoa said it has been developing its technology for 10 years, with the Hugoton project in development stages for more than five years.

In July, another US cellulosic ethanol producer POET received a \$105m loan guarantee from the DOE to construct a 25m gal/year plant in Emmetsburg, Iowa, using

corn cobs, leaves, husks and stalks as feedstock. The cellulosic ethanol plant is expected to be completed in 2013.

INEOS Bio expects four or five other companies to start commercialization of cellulosic ethanol within two to three years.

In June, DuPont Danisco Cellulosic Ethanol (DDCE) purchased a parcel of land next to a conventional ethanol plant in Nevada, Iowa, as a site for its first world commercial-scale biorefinery producing cellulosic ethanol.

Industry analysts noted that the gap between corn ethanol and cellulosic ethanol appears to be narrowing faster than expected, driven by better enzymes for catalysts, increased availability of genetically-modified crops, and better plant designs with feedstock flexibility options to reduce feedstock risk.

Niederschulte said its cellulosic ethanol price is expected to be on a par with corn ethanol



The DOE continues to give loans for cellulosic ethanol

when it comes to the retail pump. It is expected to have a higher value when it comes to obligated parties – refiners, importers and certain blenders of gasoline – that purchase or consume cellulosic ethanol to get a waiver for the RIN (renewable identification numbers). The RINs, developed as a basic currency for the EPA's Re-

newable Fuel Standard program for credits and trading, are used as mechanisms to offset mandates by allowing blenders to meet their quotas without actually buying the physical biofuel product.

“It is hard to say how the differential between cellulosic ethanol and corn ethanol will play out over time given that there’s not much cellulosic ethanol in the market,” Niederschulte said. “Over time, we think the government would want to see at least 25 cents/gal differential, and that’s probably where we will land.”

As of September 7, ICIS assessed US spot price for anhydrous corn ethanol fuel in the Midwest at \$2.77–2.80/gal FOB (free on board). Industry analysts believe cellulosic ethanol is targeted to eventually cost 80 cents to \$1/gal, compared with current production economics north of \$2/gal for most technologies. ■

Additional reporting by Joe Kamalick in Washington DC.



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