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Ethanol & Biofuels News

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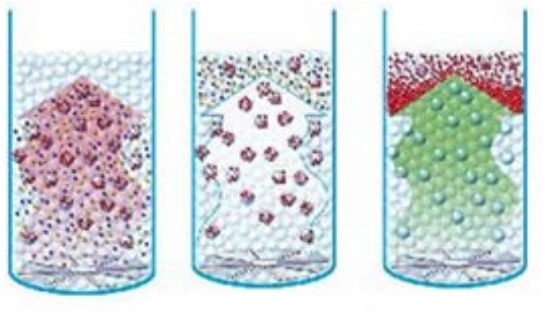
FEATURE: Capturing Additional Value: Extracting Food Ingredient Proteins from Biofuel Side Streams

>> Biofuel producers can gain additional value by capturing high purity proteins suitable for human consumption from biofuels process streams. Danish biotech company Upfront Chromatography A/S discusses this concept and its new protein extraction technology called Rhobust.

The inherent high protein content of biofuel side streams holds significant value that can often exceed that of the biofuel itself. For example, the protein content of soybeans is 35%, rapeseed 21%, wheat 13% and corn 10%. The proteins contained in these crops are highly nutritional and, if properly isolated, can be turned into high-value products, including food ingredients. These protein-rich plant sources are currently viewed as waste streams or low value byproducts that are employed in animal feed and they are not being utilized in food manufacturing. Introducing this novel chromatographic technique for valorization of process streams is an important step in the way forward to providing additional value to the biofuel business.

This technology "has the potential to help biofuel companies generate higher revenues without jeopardizing the main fuel and feed production," said Allan Lihme, chief technology officer of Upfront Chromatography. "The value that lies in the proteins from plants used for biofuel production has not yet been fully utilized."

The Rhobust technology, which is based on Expanded Bed Adsorption (EBA) chromatography, can capture diverse ranges of proteins from plants, animals, algae, yeast and other microorganisms. The principle of EBA is to allow the chromatography beads to fluidize in the feed stream, which is pumped at low pressure. The desired protein molecules are retained while the expanded bed allows unwanted particulate impurities in the feed stream to pass freely – and at very high flow rates – through the system without any clogging or pressure building up throughout the process (see figure). The EBA process offers a solution to eliminate the costly pre-filtration steps of packed-bed implementations, and has the potential to deliver significant cost savings for food ingredient protein manufacture.



Source: Upfront Chromatography A/S

Originally, EBA was developed and then scaled up for isolating biopharmaceuticals and then later fine-tuned for the food ingredients market. A

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significant success came in 2007 when Solanic, a group of AVEBE, a leading potato starch producer, constructed an industrial processing plant in its starch facility in The Netherlands exclusively based on Rhobust technology. This resulted in 1,000 tonnes of proteins being isolated from previously unused potato starch side streams. The final products consist of high performance proteins with superior solubility, foaming, emulsification and gelation properties, ready to be used as food ingredients.

"The installation at Solanic is a huge success, allowing us to extract previously inaccessible proteins from our waste stream, thereby opening up a previously untapped source of revenue and enabling us to make major energy savings," said Marco Giuseppin, chief technology officer of Solanic. This project became the world's largest industrial protein chromatography installation and contributed to Solanic's nomination for Fi Europe's Most Innovative Food Ingredients Awards in 2007.

Extra value – from crops to biofuels, plus food ingredients

The revenue increase generated by shifting from feed to food ingredients is usually significant. Current feed prices range from US$0.50 to $1 per kilogram. However, food ingredient prices are substantially higher. For example, the food ingredient prices for plant protein isolates fluctuate in the range of $5 to $10 per kilogram.

According to Frost & Sullivan analysts [*U.S. Protein Ingredients Markets*, December 2008], the protein ingredients market in the United States alone was worth $3.955 billion in 2007 and is experiencing a change, whereby proteins originating from animals are being replaced by their vegetable counterparts. As predicted, this trend continues. Entry to a new, high-value food ingredients market will provide a better revenue generating alternative for biofuel producers than competing in the less valuable byproduct arena.

Rhobust is considered an economical platform that processes large volumes of crude feedstock originating from biofuel waste and is also environmentally friendly, as it can reduce water usage, for example. This technology also enables the fractionation of proteins into single proteins, which may have special functional properties. The adaptability of the Rhobust system design makes it relatively easy to install into biofuel refineries without changing the process flow.

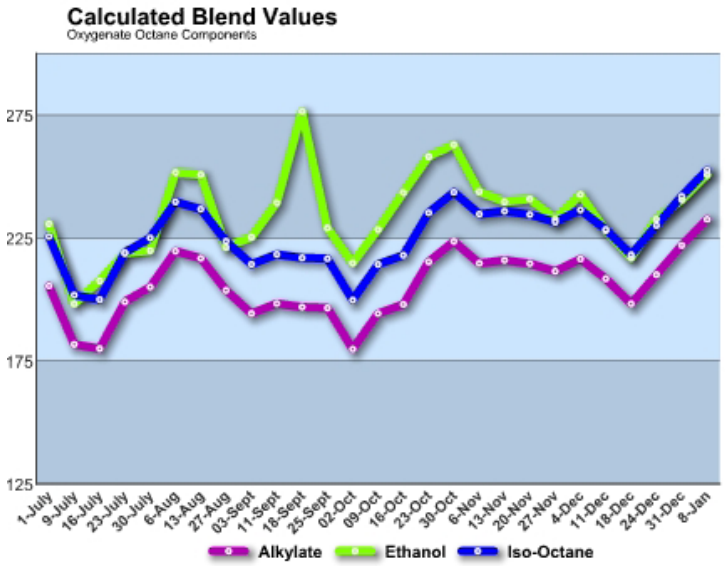
Some food ingredient companies that are aware of the Rhobust platform are starting to see the advantages this technology brings to their industry, and they are open to paying a premium for the hypoallergenic properties of vegetable proteins.

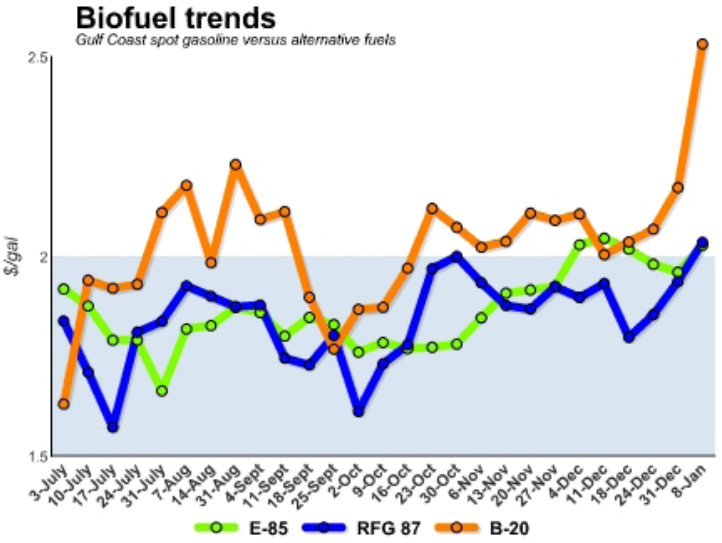
Upfront is assessing numerous applications in crop processing, such as wheat, pea, corn, oats and other cereals and is seeking partnerships with companies from the biofuel industry where these raw materials are in high abundance. The company also performs tests on the functionality and amino acid composition of proteins as well as documentation for required regulatory procedures. ■

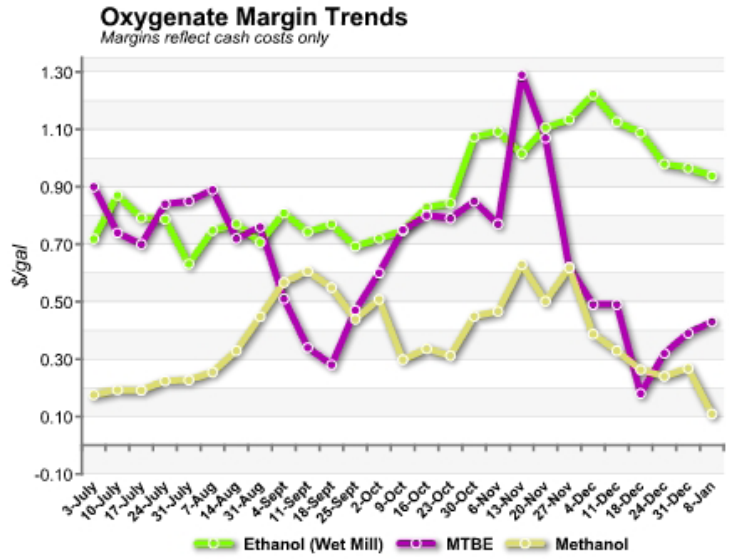
Natalya Clark
UpFront Chromatography A/S

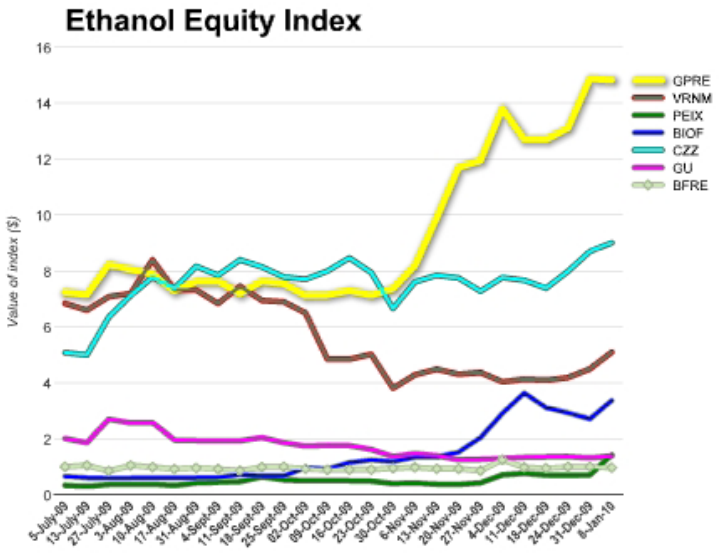
PRICES & MARKETS

Market Report

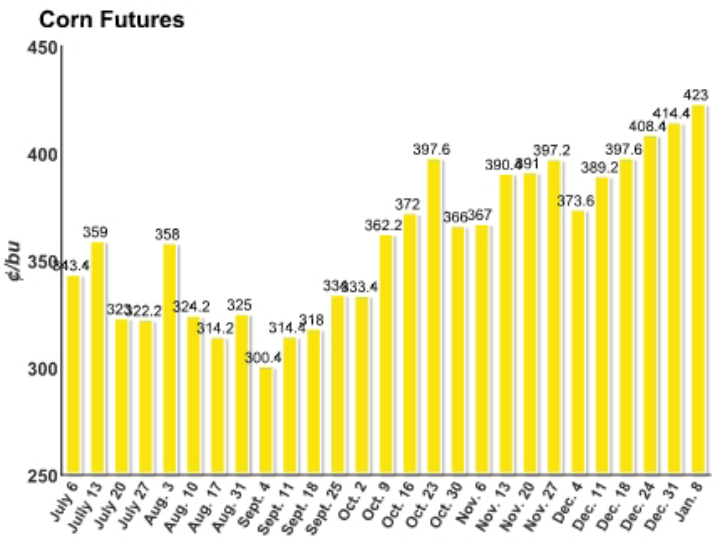








Futures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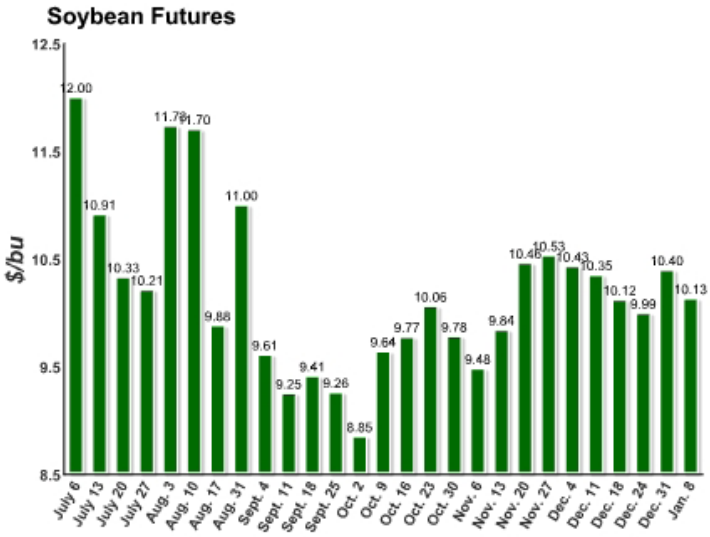
Soybean Futures
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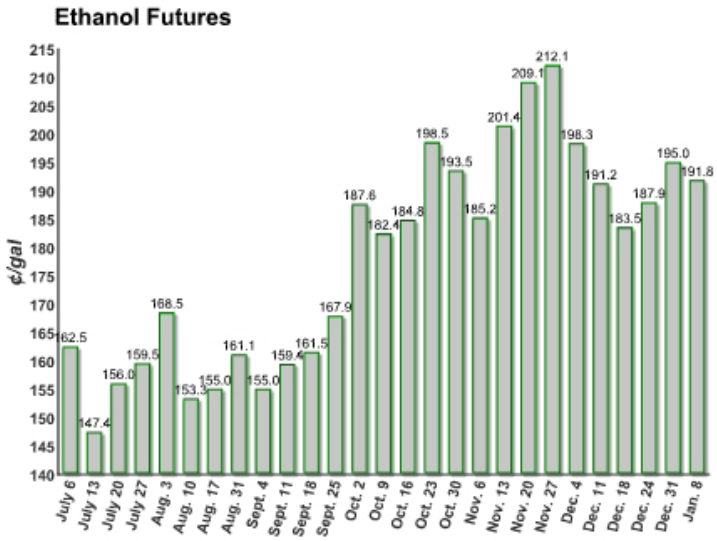
Ethanol Futures
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Jan. 8

Prices

Ethanol Rack Average ($/gal)	01/08/10	12/31/09	Change
U.S. Average*	2.13	2.12	*0.00*
AR -- Little Rock	2.22	2.22	*0.00*
CO -- Denver	2.16	2.16	*0.00*
FL -- Tampa	2.60	2.53	*0.08*
IA -- Bettendorf	2.03	2.05	*-0.03*
IA -- Iowa City	1.99	1.99	*0.00*
ID -- Boise	2.41	2.36	*0.05*
IL -- Decatur	2.04	2.04	*0.00*
IL -- Peoria	2.09	2.10	*-0.01*
IN -- Evansville	2.25	2.25	*0.00*
IN -- Indianapolis	2.02	2.02	*-0.01*
IN -- South Bend	2.04	2.02	*0.02*
KS -- Kansas City	2.01	1.97	*0.04*
KS -- Wichita	2.09	2.11	*-0.02*
MN -- Minneapolis	2.07	2.08	*-0.01*
MO -- Springfield	2.12	2.10	*0.01*
MT -- Billings	2.18	2.20	*-0.02*
ND -- Fargo	1.96	1.96	*0.00*
NE -- Lincoln	2.04	2.05	*-0.01*
NE -- Omaha	1.99	1.99	*0.01*
OH -- Lebanon	1.98	1.98	*0.00*
OK -- Ardmore	2.21	2.19	*0.02*
OR -- Portland	2.19	2.16	*0.03*
TN -- Knoxville	2.18	2.21	*-0.03*
TX -- Amarillo	2.22	2.22	*0.00*
WI -- Milwaukee	2.15	2.15	*0.00*

Prices provided by TELVENT

Biodiesel B-100 Rack Average ($/gal)	1/8/2010	12/31/2009	Change
CA Los Angeles	2.556	2.940	-0.384
GA Cartersville	2.400	2.400	0.000
MO Cape Girardeau	1.800	2.800	-1.000
NJ Williamstown	2.250	2.250	0.000
PA Harrisburg	2.890	2.990	-0.100
TX Dallas	2.790	2.360	0.430
CO Denver	2.730	2.730	0.000

Source: Oil Price Information Service (OPIS). Prices have been adjusted to reflect exclusion of $1/g blender tax credit for all locations except Missouri.

Oxygenates ($/gal)	1/8/2010	12/31/2009	Change
Alkylate	2.3262	2.2200	0.106
Iso-Octane	2.5262	2.4200	0.106
Methanol	1.10	1.10	0.000
MTBE	2.420	2.380	0.040

Source: DeWitt & Co., Methanex

Butanes/Natural Gas	01/08/10	12/31/09	Change
Butane ($/gal)	1.4800	1.4800	*0.0000*
Isobutane ($/gal)	1.7900	1.7200	*0.0700*
Natural Gas ($/MMBtu)	7.5100	5.8200	*1.6900*

Source: Intercontinental Exchange

Spot Gasoline ($/gal)	12/31/2009	12/24/2009	Change
N.Y. Conventional	2.049	1.978	*0.071*
N.Y. RBOB	2.039	1.963	*0.076*
Houston Conventional	2.035	1.937	*0.098*
Houston RBOB	1.995	1.94	*0.055*
L.A. RBOB	2.186	2.13	*0.056*
L.A. Conventional	2.124	2.075	*0.049*

Source: U.S. Energy Information Administration

Co-Products ($/Ton)	01/08/10	12/31/09	Change
Dist. Dried Grains	135.00	135.00	*0.00*
Corn Gluten Feed	95.00	91.50	*3.50*
Corn Gluten Meal	575.00	575.00	*0.00*
Crude Corn Oil (wet-mill) ($/lb)	0.4100	0.4050	*0.0050*

Source: U.S. Department of Agriculture

E-85 Prices	1/8/2009	12/31/2009	Change
West	2.1925	2.2267	*-0.034*
Midwest	2.0278	1.96	*0.068*
South	2.20	2.08	*0.120*
East	2.208	2.1875	*0.021*

Averages were calculated based on a combination of local consumer reports and telephone surveys in the respective regions. Prices are averages based on data collected in a period of within two to three days of the dates above.

Grain Prices ($/bu)	01/08/10	12/31/09	Change
CASH CORN:			
Kansas City	4.0100	3.9000	*0.1100*
Chicago	4.0750	3.9600	*0.1150*
Kansas City sorghum (milo)	3.5616	3.4496	*0.1120*
CBOT March Corn	4.3320	4.2420	*0.0900*

Source: U.S. Department of Agriculture

Ethanol Equities: ANDE, BG Post Gains, ADM Down

>> Archer Daniels Midland (ADM) saw prices continue to go down the first week of 2010, while The Andersons (ANDE) and Bunge (BG) saw upward movement. ADM dropped 0.26% (8¢), while ANDE rose 0.62% (16¢), and BG went up 11.12% (US$7.10).

Ethanol & Biofuels News tracks equity values of publicly traded ethanol companies in two ways.

This weekly table will cover the large cap ethanol names: ADM, ANDE and BG, which are active in wider agricultural markets beyond ethanol.

The graphic under the "Equities" tab on the home page of Ethanol &Biofuels News covers pure ethanol players such as Biofuel Energy (BIOF), BlueFire Ethanol (BFRE), Green Plains Renewable Energy (GPRE), Verenium (VRNM) and Pacific Ethanol (PEIX).

For an international perspective we've added Cosan (CZZ), which is a large player in Brazil and trades on the New York Stock Exchange (NYSE), and Gushan (GU), the Chinese biodiesel giant, which is also on NYSE. ■

Ethanol Equities

	ADM	*Change*	%	ANDE	*Change*	%	BG	*Change*	%
1/8/2010	31.23	-0.08	-0.26	25.98	0.16	0.62	70.93	7.1	11.12
12/31/2009	31.31	-0.26	-0.82	25.82	-1.09	-4.05	63.83	0.83	1.32
12/24/2009	31.57	1.02	3.34	26.91	1.12	4.34	63	1.14	1.84
12/18/2009	30.55	0.06	0.20	25.79	-0.28	-1.07	61.86	-0.38	-0.61
12/11/2009	30.49	-1.1	-3.48	26.07	-1.94	-6.93	62.24	-3.16	-4.83
12/4/2009	31.59	0.94	3.07	28.01	0.77	2.83	65.4	3.59	5.81
11/27/2009	30.65	-0.97	-3.07	27.24	-0.83	-2.96	61.81	-1.5	-2.37
11/20/2009	31.62	-0.89	-2.74	28.07	2.98	11.88	63.31	5.04	8.65

Spot Ethanol: Prices Down First Week of 2010

>> Prices were down 4¢ to 6¢ across the ethanol spot market the first week of 2010. Down 4¢ were New York to $2.04/gal; Argo, Ill., to $1.91/gal; Houston to $1.94/gal; and New Orleans to $1.95/gal. Falling 5¢ were Doraville, Ga., to $2.08/gal; Baltimore to $2.01/gal; Los Angeles to $2.02/gal; Richmond, Va., to $2.005/gal; and Seattle to $2.02/gal. San Francisco fell 6¢ to $2.035/gal. ■

Spot Ethanol ($/gal)

		1/8/10	12/31/09	Change
NY	New York Harbor	2.040	2.080	-0.040
IL	Argo	1.910	1.950	-0.040
GA	Doraville	2.080	2.130	-0.050
MD	Baltimore	2.010	2.060	-0.050
CA	Los Angeles	2.020	2.070	-0.050
CA	San Francisco	2.035	2.095	-0.060
VA	Richmond	2.005	2.055	-0.050
TX	Houston	1.940	1.980	-0.040
WA	Seattle	2.020	2.070	-0.050
LA	New Orleans	1.950	1.990	-0.040

LEGISLATION & POLITICS

Study: U.S. Biofuels Policies Flawed

>> According to a new policy paper by Rice University's Baker Institute for Public Policy, the United States needs to fundamentally rethink its policy of promoting ethanol to diversify its energy sources and increase energy security.

Fundamentals of a Sustainable U.S. Biofuels Policy, questions the economic, environmental and logistical basis for the billions of dollars in federal subsidies and protectionist tariffs that go to domestic ethanol producers every year.

"We need to set realistic targets for ethanol in the United States instead of just throwing taxpayer money out the window," said Amy Myers Jaffe, one of the report's authors and a fellow in energy studies at the Baker Institute as well as associate director of the Rice Energy Program.

As an example of the unintended economic consequences of U.S. biofuels policy, the report notes that in 2008 "the U.S. government spent [U.S.]$4 billion in biofuels subsidies to replace roughly 2% of the U.S. gasoline supply. The average cost to the taxpayer of those 'substituted' barrels of gasoline was roughly $82 a barrel, or $1.95 per gallon on top of the retail gasoline price (i.e., what consumers pay at the pump)."

The report questions whether mandated volumes for biofuels can be met and whether biofuels are improving the environment or energy security.

The report, which includes analysis by environmental scientists, highlights the environmental threats posed by current biofuels policy.

"Increases in corn-based ethanol production in the Midwest could cause an increase in detrimental regional environmental impacts," the study states, "including exacerbating damage to ecosystems and fisheries along the Mississippi River and in the Gulf of Mexico and creating water shortages in some areas experiencing significant increases in fuel crop irrigation."

Moreover, the report challenges claims that ethanol use lowers greenhouse gas (GHG) emissions and argues, "there is no scientific consensus on the climate-friendly nature of U.S.-produced corn-based ethanol, and it should not be credited with reducing GHGs when compared to the burning of traditional gasoline."

The study was supported by a research grant in environmental engineering from Chevron Technology Ventures. ■

Theresa Ward

CARB to Unveil Biodiesel/Renewable Diesel Regulation Jan. 20

>> California Air Resources Board (CARB) officials will hold a public workshop in Sacramento on Jan. 20 "to discuss the upcoming biodiesel and renewable diesel regulation."

The meeting aims to "introduce regulatory concepts and solicit stakeholder feedback," according to the CARB.

A final agenda, CARB staff presentations and supporting information will be posted at the following site: link to source document. ■

Jack Peckham

ISO to Develop Standard Addressing Bioenergy Sustainability

>> In response to growing international interest in bioenergy and the current lack of globally harmonized sustainability criteria, the International Organization for Standardization (ISO) announced Jan. 7 that it will develop an international standard to address sustainability issues linked to bioenergy. According to ISO, the standard will be produced by a new ISO project committee, ISO/PC 248, Sustainability criteria for bioenergy.

ISO/PC 248 will bring together international expertise and best practices to discuss the social, economic and environmental aspects of the production, supply chain and use of bioenergy, and identify criteria that could prevent it from being environmentally destructive or socially aggressive, an ISO release stated.

Approximately 29 countries are now involved as participants or observers, including China and the United States. Brazil and Germany will provide the secretariat and leadership of the committee under a twinned arrangement, according to ISO. The standard is expected to be a key tool in helping governments meet their alternative fuel targets, the release further stated.

The future standard (ISO 13065) is expected to make an important contribution to the global goal of replacing fossil fuels with bioenergy by for example, helping avoid technical barriers to trade on bioenergy. ISO 13065 will disseminate technical know-how and stimulate the ongoing pursuit for quality through the incentive to research, according to ISO.

In addition to tackling social and environmental issues, the standard will make bioenergy more competitive to the benefit of both national and international markets, the release reported. ISO 13065 will also be valuable in helping producers in developing countries compete on the global market, ISO reported.

The new committee, ISO/PC 248, will hold its first meeting in April 2010. ■

Louise Poirier

TECHNOLOGY UPDATE

Researchers Find Air-lift Loop Bioreactor Offers Energy-efficient Way to Produce Algal Biofuels

>> A team of scientists from the University of Sheffield, Sheffield, England, was awarded the Moulton Medal from the Institution of Chemical Engineers, which recognizes the best paper published in the Institution's journal during the year, in recognition of their work on a device to make the production of algal biofuels more energy efficient.

According to a Jan. 7 press release, the research team has devised an air-lift loop bioreactor that creates microbubbles using 18% less energy consumption. Microbubbles are miniature gas bubbles of less than 50 microns diameter in water that are able to transfer materials in a bioreactor much more rapidly than larger bubbles produced by conventional bubble generation techniques, and also consume much less energy.

The approach is currently being tested with researchers from Suprafilt in Rochdale, Lancashire, U.K., on industrial stack gases, the release reported. The team is also currently testing the application of the device with local water company Yorkshire Water. They are using the components of the bioreactor that produce microbubbles to give a better performance in the treatment of wastewater. They are predicting to reduce the current electricity costs for this process by one-third, according to the release.

The major conclusions drawn by the researchers, highlighted on a poster presentation at the 6th Annual Bioprocess UK Conference in York, England, in November, were:

"Microbubbles dissolve CO2 faster and therefore increase algal growth. This may be useful in many carbon sequestration processes.

"Algal culture with the fluidic oscillator generated bubbles had about 30% higher yield than conventionally produced bubbles with only dosing of one hour per day over a two-week trial period.

"Bioenergy could become a more attractive option in the recycling of the high concentration of CO2 emissions from stack gases."

The research team's paper, *On the Design and Simulation of an Airlift Loop Bioreactor with Microbubble Generation by Fluidic Oscillation*, is available here. ■

Louise Poirier

Spectrometer Detects Biodiesel in Diesel

>> Wilks Enterprise's Infraspec VFA-IR spectrometer, featuring a new flow-through sample system, is now capable of measuring biodiesel in diesel fuel down to 0.05%.

According to a Jan. 11 press release, the Infraspec VFA-IR spectrometer is suitable for onsite biodiesel measurements in less than one minute by non-technically trained personnel. This spectral range analyzer contains a linear variable filter with a 128-pixel detector array covering a wavelength range of 5.4 µm to 10.8 µm (1,850 cm to 925 cm) and an integrated flow-through sample cell. The spectrometer is compact, portable and also has a simplified personal computer interface.

If a delivery of diesel fuel to be shipped through a pipeline contains unlabeled biodiesel or the pipeline previously carried a diesel/biodiesel blend, it is important to ensure there is no residual biodiesel present in the delivery to a customer that requires pure diesel fuel, such as a nuclear power plant, the release stated.

ASTM D975 currently allows up to 5% biodiesel in diesel without labeling. ■

Louise Poirier

INDUSTRY & FACILITY NEWS

US$28.4 Million Tax Credit to Novozymes to Advance Biofuels Production, Create Jobs

>> Novozymes announced Jan. 11 that the company has received an Advanced Energy Manufacturing Tax Credit of US$28.4 million from the U.S. President Barack Obama administration for the construction of its new enzyme manufacturing facility in Blair, Neb. The facility, which will produce enzymes used to make advanced biofuels, will create more than 100 green jobs for the state, according to a Novozymes release.

The tax credit is part of the American Recovery and Reinvestment Act, which included a tax credit for investments in manufacturing facilities for clean energy technologies. A total of $2.3 billion in tax credits is being allocated for investments in 183 manufacturing facilities for clean energy products across 43 states, the release stated.

According to Novozymes, the company's tax credit is dependent on the production of advanced biofuels and would benefit the company in the shape of reduced tax payments. The benefit could be up to $18 million in total after tax. It would become available from 2012-2013 and received during a couple of years.

Novozymes will invest a total of $160 million to $200 million in the construc-

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US $28 Continued

tion of the facility in Nebraska and applied for the credit in September 2009. The blending facility at the site became operational as of November 2009 and is currently shipping enzymes to customers globally, the release stated. The facility is expected to be fully operational in mid-2012. ■

Louise Poirier

Mascoma Appoints New Chief Executive Officer

>> Mascoma Corp. officials announced Jan. 7 the appointment of William J. Brady as the company's new chief executive officer, effective immediately. Brady will also join the boards of directors of Mascoma and Frontier Renewable Resources LLC.

According to a Mascoma release, Brady will work to help achieve the company's technical and commercial milestones, including continuing to reduce costs for ethanol produced from cellulosic feedstocks, developing additional partnerships for Mascoma's commercial-scale ethanol project in Kinross Township, Mich., and creating strategic joint ventures to commercialize Mascoma's proprietary Consolidated Bioprocessing technology for production of advanced biofuels and chemicals.

Before coming to Mascoma, Brady served as executive vice president and general manager of several operating divisions at Cabot Corp., leading business units from technical development through commercialization, as well as managing global capital-intensive businesses and developing strategic relationships with large global customers, according to a Mascoma release.

William J. Brady, Chief Executive Officer, Mascoma Corp. (Image courtesy of Mascoma)

Mascoma's Acting President Jim Flatt will continue as executive vice president, Research & Development (R&D)/Operations, where he will continue active oversight of and participation in Mascoma's R&D and Operations efforts, supporting Frontier's development efforts as well. Bruce Jamerson will continue as chairman of Mascoma and Frontier. ■

Louise Poirier

Pacific Ethanol Resumes Production at Magic Valley Facility

>> Pacific Ethanol, Inc. has resumed production at its 60-million-gallon-per-year Magic Valley facility located in Burley, Idaho, the company announced Jan. 6. In February 2009, production was suspended at the facility because of extended unfavorable market conditions.

According to the release, in May 2009, Pacific Ethanol's subsidiaries, which own its four ethanol production facilities, including the Magic Valley plant, filed for Chapter 11 bankruptcy protection in the District of Delaware in an effort to restructure their indebtedness. In December 2009, Pacific Ethanol obtained necessary court and lender approvals to resume operations at the Magic Valley facility. The facility has completed all necessary safety and startup activities and is now producing and selling ethanol and feed products. ■

Louise Poirier

Imperium Renewables Announces Cause of Accident at Biodiesel Plant

>> Imperium Renewables recently announced the findings of an investigation into the cause of an accident on Dec. 2, 2009, in which over-pressurization caused a rupture in the glycerin neutralization tank at its Imperium Grays Harbor biodiesel production facility in Hoquiam, Wash. The over-pressurization was the result of an oversupply of sulfuric acid into the glycerin neutralization tank, which caused an unexpected exothermic reaction, according to the company.

"Imperium's glycerin neutralization process is a secondary and wholly separate chemical process from the transesterification facility which is used to produce biodiesel. Glycerin is a by-product of biodiesel and sold to other industries. However, in order to for it to be marketed to end-users, glycerin must have a neutral pH level. Typically, sulfuric acid is mixed with glycerin to 'neutralize' the pH level. When mixed in the recommended ratio, the chemical

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Imperium Continued

reaction does not pose a safety threat," the release explained.

The Dec. 2 accident occurred when Imperium personnel mixed sulfuric acid in a much higher ratio, which created the exothermic reaction, the release stated. Personnel were unaware of the potential for such a reaction, and the processing equipment itself was not designed with physical or mechanical safeguards to prevent an oversupply of sulfuric acid, Imperium further reported.

The company has consulted with engineers from Harris Group and is now replacing the glycerin neutralization tank with a complete new system, equipped with stringent safeguards to prevent an oversupply of sulfuric acid, the company explained. New employee training and safety programs have also been instituted onsite.

Imperium will be working with industry trade groups to increase the awareness among biodiesel producers across the country about the potential for hazard in the glycerin neutralization process, which is common throughout the industry, the release continued.

Completion of the new glycerin neutralization system is expected in the near term, which will allow Imperium to begin production as soon as market conditions are viable. ■

Louise Poirier

Companies Team Up on Biojet

>> BioJet Corp. and Great Plains Oil & Exploration have executed a Teaming Agreement for the purpose of producing renewable jet fuels, the companies announced Jan. 6. The companies plan to jointly develop integrated camelina cultivation and associated refinery projects in the United States, Europe, South America and Asia.

BioJet will bring its international network and management experience in developing renewable jet fuel projects, while Great Plains will provide its experience in camelina growth and processing. It is estimated that within five years, the release stated, camelina production from currently planned team projects will yield about 200 million gallons per year of renewable jet fuel, 65 million gallons per year of co-products, and 2.3 million tons per year of Camelina meal for use as a high-quality animal feed, the release stated.

"Affordable feedstock is the key to all biofuels, and due to camelina's low inputs and high-quality meal by-product, it has tremendous potential to be competitive with petroleum jet fuel. The scale of these projects will allow this to happen quickly," said Great Plains Chief Executive Officer Sam Huttenbauer in the release. "This relationship greatly expands our bandwidth for international crop production, refining, sales and distribution, corporate finance and carbon trading. We expect these capabilities to allow our company to rapidly produce camelina-derived renewable jet fuel at competitive pricing."

"This deal effectively triples our feedstock resources. It is a major step in the achievement of our goal of 20 million barrels per year of renewable jet fuel by 2020," said BioJet chief executive officer Mitch Hawkins in the release. ■

Louise Poirier

Blendstar's Biofuels Blending Terminal Opens in Mississippi

>> A new Blendstar terminal has opened in Collins, Miss., Green Plains Renewable Energy, Inc. announced Jan. 6. The new terminal is Blendstar's eighth operating facility, located in six states.

The terminal is wholly-owned and controlled by Blendstar LLC, which develops and operates a network of renewable fuels terminals throughout the United States. ■

Louise Poirier

Grand Opening for Tenn. Cellulosic Ethanol Plant

>> On Friday, Jan. 29, DuPont Danisco Cellulosic Ethanol LLC (DDCE) and University of Tennessee/Genera Energy LLC will hold a grand opening celebration for one of the first cellulosic ethanol demonstration plants in the United States, and the only one dedicated to converting agricultural residue and bioenergy crops to fuel ethanol. The facility in Vonore, Tenn., has initiated start-up and commissioning and will begin producing ethanol in mid-January, according to a Jan. 7 release.

The 74,000-square-foot facility has the capacity to produce 250,000 gallons of ethanol from corncobs and switchgrass and is preparing DDCE's innovative integrated technology for commercial production by 2012, the release stated. Grand opening activities will include tours of the facility and technical demonstrations. ■

Louise Poirier

Renewable Energy Group to Supply Biodiesel for Hawaiian Electric's New Campbell Industrial Park Generation Station

>> Hawaiian Electric Co. has signed a contract with a subsidiary of Iowa-based Renewable Energy Group (REG) to supply 3 million to 7 million gallons of renewable biodiesel per year for two years to be used for Hawaiian Electric's new 110-megaWatt combustion turbine generator unit at Campbell Industrial Park Generating Station (CIP GS), representatives with the companies announced Jan. 5.

REG, which won an earlier bid to supply biodiesel for emissions testing in the unit, emerged as winning bidder from among eight companies seeking to fill the two-year contract, the company reported. As in the earlier contract, the new two-year agreement calls for REG to supply high-quality biodiesel processed from used cooking oil (yellow grease) and waste animal fat.

As with all Hawaiian Electric fuel contracts, this contract has been submitted to the Hawaii Public Utilities Commission (PUC) for approval, with input from the Hawaii Division of Consumer Advocacy, before the contract can be included in Hawaiian Electric fuel costs, the release stated. Delivery of the biodiesel could begin within about four months of PUC approval. ■

Louise Poirier

Transport Research Board Seeks Alternative Jet-Fuel Study

>> Washington, D.C.-based Transportation Research Board's Airport Cooperative Research Program (ACRP) officials announced Jan. 6 that they've issued a request for proposals (RFP) to prepare a handbook on "drop-in" alternative jet fuel production and delivery.

The handbook would "summarize issues and opportunities related to locating an alternative jet fuel production facility, and its storage and distribution requirements."

RFPs are due Feb. 25. A complete description of the proposal is available on the Web site: source document. ■

Jack Peckham

Syntec, EERC Team-up on Biobutanol Scheme

>> Vancouver, B.C.-based Syntec officials and the University of North Dakota Energy and Environmental Research Center (EERC) announced Jan. 7 a new scheme to convert non-food biomass into bio-butanol, a proposed "green" gasoline blendstock.

"The core process utilizes Syntec's high-performance catalyst technology in conjunction with an upgrading process exclusively licensed from the EERC Foundation," according to Syntec.

Because butanol's hydrocarbon chain is twice that of ethanol, it is more similar to gasoline than it is to ethanol and thus "constitutes a superior fuel," according to Syntec.

Michael Jackson, chief executive officer of Syntec, cited EERC as "a leader in the field of biomass gasification and liquefaction," which can "assist Syntec in our quest toward commercialization."

"We are not aware of any other company in the world that is developing a thermochemical process utilizing non-food materials to predominantly produce bio-butanol. In a joint venture with DuPont, BP is building a demonstration plant in the United Kingdom to convert sugar into bio-butanol. This is concerning, as it uses food resources to produce fuel," Jackson said.

Syntec officials say they have developed a thermochemical process that breaks down municipal solid waste, wood and agricultural waste into reactive components that form with Syntec's patent-pending catalysts to produce ethanol, methanol, propanol and butanol. ■

Jack Peckham

Alter NRG-Coskata Gasification-Ethanol Project Starts-Up

>> Calgary, Alberta-based Alter NRG officials announced Jan. 6 that they've started-up a biomass-conversion plasma-gasification system at their Westinghouse Plasma Co. (WPC) division in Madison, Pa.

That plant is converting non-food biomass into synthesis gas, which in turn is converted into cellulosic ethanol at an adjacent facility operated by Coskata Inc.

The Project Lighthouse scheme (gasification followed by ethanol production) is touted as being "significantly better than the current ethanol industry" on net energy efficiency, according to the company.

"The feedstock-flexible process utilizes non- food biomass, thereby providing an opportunity to produce fuel-grade ethanol in greater quantities and at a lower cost point than that produced from food-based sources" such as corn or sugar, according to the company.

"This approximate US$25 million semi-commercial facility constructed by Coskata will increase the utilization rate of the WPC gasification facility and is anticipated to provide approximately $2.5 [million] to $3 million in revenue to [Alter NRG] from the production of specified syngas during the first half of 2010," according to the company.

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Alter Continued

The gasification section of the demonstration plant has been modified to produce "clean, tar-free synthetic gas tailored for the Coskata process," according to the company.

"The syngas produced from biomass is expected to be suitable for other energy production processes, such as the production of power from a gas turbine."

Currently, the peak volume of biomass processed per day at the facility is 18 tons.

"Working alongside Alter NRG has allowed us to showcase the successful scale-up and commercial viability of our process," according to Coskata Chief Executive Officer Bill Roe. "Project Lighthouse has been designed to allow direct scaling to commercial plants capable of producing 50 million to 100 million gallons per year," he added. ■

Jack Peckham

INTERNATIONAL DEVELOPMENTS

Ottawa Orders Study on Environmental, Health Effects of Making Renewable Fuels

>> The Harper government in Ottawa, Canada, has ordered a study into the environmental and health effects of producing ethanol and biodiesel after other countries found facilities that make renewable fuels could be behind problems with air, water and human health, the Canadian Press (CP) reported Jan. 6.

"Based on global production levels from the past three years alone, there is now evidence of implications to the environment from biofuels-based ethanol production facilities," CP quoted a government document released Wednesday.

The document continued: "Biofuels (ethanol and biodiesel) are still viewed as 'green' energy sources by some; however criticism of biofuels has also grown remarkably throughout recent years. ...

"Experiences in the U.S. and Brazil now suggest that existing biofuels production facilities are responsible for the generation of a range of new air-and water-related problems as well as recent concerns over human health."

The article further stated that "Environment Canada is now looking for a firm to come up with environmental benchmarks for biofuel production. A report is due by the end of March. The work is valued at up to CAN$65,000 (US$62,500)." ■

Louise Poirier

Bunge Ltd. Appoints Pedro Parente as President and CEO, Bunge Brazil

>> Bunge Ltd. has appointed Pedro Parente to the newly created position of president and chief executive officer of Bunge Brazil, effective Jan. 11, 2010. In his new role, Parente will lead all of Bunge's businesses in Brazil, the company stated in a Jan. 7 press release.

Until December 2009, Parente served as chief operating officer of Grupo RBS, a Brazilian multimedia company. Prior to joining RBS, he held a variety of high-level posts in the public sector, serving as chief of staff, minister of planning and deputy minister of finance during the administration of Brazilian President Fernando Henrique Cardoso, the release reported. Parente has also served as a consultant to the International Monetary Fund, has worked at the Brazilian Central Bank and Banco do Brasil, and is a former chairman of the board of Petrobras and Banco do Brasil. ■

Louise Poirier

Brazil Cuts Ethanol Requirement to 20%

>> The Brazilian government Jan. 11 cut the mandatory amount of ethanol mixed into gasoline to 20% from 25%, *Bloomberg* reported the same day. This new requirement will start Feb. 1 and will last 90 days, the Agriculture Ministry was quoted as saying.

The article continued:

"Brazil decided to cut the ethanol level after stocks of the biofuel waned at the end of the sugar cane harvest. Ethanol prices rose to 67¢ per liter (L) last week, the highest since at least July 2007, according to weekly prices tracked by Esalq.

"Ethanol production in Brazil's Center South, the world's largest sugar-producing region, fell 8.3% last year to 22.2 billion L (5.86 billion gallons) compared with a year earlier, industry association Unica said Dec. 15. Above-average rainfall in Brazil's Center South hindered harvesting that ended last month and reduced yields.

"About 90% of all new passenger vehicles in the country have so-called flex-fuel engines, which can run just on ethanol or any mix of the biofuel with gasoline." ■

Louise Poirier

China Clean Energy Announces Launch of Commercial Production at Jiangyin Plant

>> China Clean Energy Inc., a producer of biodiesel fuel in China, announced Jan. 7 that the trial production phase at its Jiangyin plant has been successfully completed and, as of January 2010, the new plant is operating on a commercial basis. The company's administrative headquarters is now located at the new plant as well.

The Jiangyin plant will increase the company's specialty-chemicals capacity by 30,000 tons per year to a total of 40,000 tons per year, a press release stated. The new plant will also increase biodiesel capacity by 40,000 tons per year to 50,000 tons per year.

"Management anticipates that for the first quarter of 2010, China Clean Energy will produce a total of 4,000-4,500 tons of specialty chemicals and 3,000-4,000 tons of biodiesel in both plants. Management presently expects revenue for the first quarter of 2010 to be RMB 50 million (approximately US$7.3 million), representing an increase of approximately 150% over the comparable period in 2009," according to the release. ■

Louise Poirier

Qatari Biojet Fuel Initiative

>> Qatar Airways, Qatar Science & Technology Park (QSTP) and Qatar Petroleum (QP) announced Jan. 10 that they will jointly carry out engineering, economic analysis and move into the development of sustainable biojet fuel that will also look into ways for production and supply, with the support of Airbus.

Qatar Airways' successfully conducted the first commercial flight powered by a gas-to-liquid fuel blend last October.

Seven months ago, Qatar Airways, Qatar Science & Technology Park along with U.S.-based Verno Systems Inc. began a comprehensive and detailed feasibility study on sustainable biomass-to-liquid (BTL) jet fuel and possible byproducts such as biodiesel. According to the release, this study looked at all available bio-feedstocks that would not affect the food or fresh water supply chain, in addition to existing and future production technologies with a viability analysis.

Based on the results of that study, the partners have agreed to establish the "Qatar Advanced Biofuel Platform" (QABP), which will lead activities in four areas:

-A detailed engineering and implementation plan for economically viable and sustainable biofuel production;

-A biofuel investment strategy;

-An advanced technology development program; and

-Ongoing market and strategic analysis.

"QABP will be structured so that it can be expanded to include additional projects, technologies, investments and partnerships globally," the release stated. "QABP takes a portfolio approach to the development of advanced biofuels across feed stocks, technologies and geographies in order to meet our short, medium and long term goals.

"Specific feedstocks have been identified which could be developed and processed with the aim of providing access to BTL jet fuel for use by Qatar Airways." ■

Louise Poirier

Iogen Doubles Cellulosic Ethanol Production

>> Iogen Corp.'s cellulosic ethanol production in 2009 topped 581,000 liters, more than doubling the firm's 2008 fuel production, and surpassing the one million liter mark in cumulative production since 2004, the company announced Jan. 11.

Iogen has been producing cellulosic ethanol at its Ottawa demonstration plant since 2004. Iogen also develops, manufactures and markets enzymes used to modify and improve the processing of natural fibers within the textile, animal feed and pulp and paper industries. ■

Louise Poirier

COFCO Opens 63-Million-Gallon Cassava Ethanol Plant in China

>> The COFCO Group has begun operations at China's first non-grain ethanol project, a 63 million gallon per year cassava ethanol plant in Beihai, Biofuels Digest reported Jan. 7. This came after the Chinese government suspended the production of ethanol from corn, the article stated.

According to the report, the project will utilize cassava grown on 24,700 acres in Beihai, located in Guangxi, China's southwest province. The 90-acre distillery is located at the Guangxi Hepu Industrial Park in Beihai and cost US$213 million. The project will also produce 50,000 tons of feed, 29.7 billion liters of methane and 50,000 tons of carbon dioxide. ■

Louise Poirier

GEM BioFuels to Ship Crude Jatropha Oil in Mid-January

>> Proactive Investors UK reported Jan. 8 that in an operational update, GEM BioFuels said it will release its first shipments of crude jatropha oil (CJO) by mid-January. The first 40-ton shipment will leave Madagascar for Australia on two, 20-foot shipping containers, the article stated. A second shipment of 20 tons will depart for Germany a week later.

GEM BioFuels was founded in 2004 to capitalize on the opportunity presented by the local agricultural and socio-economic conditions in Madagascar, according to the article. The company began commercial production of CJO in November 2009, which is being carried out under contract using a third-party oil extraction facility, the article stated. The maximum anticipated rate of production for 2010 under this arrangement would be 5,000 tons per annum.

According to Proactive Investors UK: "In the South of Madagascar, the biofuel producer's current planted area covers 55,700 hectares. The company has a prudent approach toward asset management, and it is not currently carrying out a significant planting program for the 2009-2010 planting season. GEM is consolidating existing plantation areas with a view to maximizing their future viability.

"GEM has a 50-year agreement providing exclusive rights over 452,500 hectares to establish plantations in Southern Madagascar, ranging in size from 2,500 to 50,000 hectares." ■

Louise Poirier

Second Generation Biofuel Project Launched in France

>> The French Atomic Energy Commission (CEA) is launching the first phase of a project to build a biomass-to-liquids (BTL) conversion pilot unit that will transform agricultural and forestry residues into second generation biofuel, in Bure Saudron, which is located 80 km from Nancy in northeastern France, an Air Liquide press release announced in late December.

"The Bure Saudron pilot will demonstrate a complete BTL production chain: gathering and conditioning of the biomass, gasification, gas processing and conversion to synthetic fuel via the Fischer-Tropsch process. It is intended provide the experience necessary for the establishment of a BTL sector, both for process integration techniques and for the definition of a regional economic model. This will be the first production unit of its kind in France," news source Green Car Congress reported. "The pilot plant will use some 75,000 tons per year of forest and local agricultural residue to produce about 23,000 tons/year of second-generation biofuel (diesel, kerosene and naptha).

"Currently, a limitation of BTL processing is the mass yield of the end products. The Bure Saudron project will experiment with a novel solution to increase process efficiency – the ratio of hydrogen to carbon monoxide generated during the synthesis stage of the fuel will be greatly enhanced by the external input of hydrogen. This innovation will be a world first, according to the CEA.

"This first phase involves the detailed design studies and is under contract with the CNIM group (Constructions Industrielles de la Méditerranée) as prime contractor, and in partnership with Air Liquide, Choren, SNC Lavalin, Foster Wheeler-France and MSW Energy.

"Air Liquide will coordinate some of the technical engineering operations and process steps downstream, from gasification through final biofuel upgrading. Air Liquide will also provide oxygen and hydrogen. Oxygen is a required component of the gasification process, and the hydrogen will be used to enhance the quantity and quality of the synthetic fuel produced. Choren is providing the gasification technology.

"The choice to locate the pilot plant at the site of Bure Saudron was based in part on commitments made in 2006 to support the economic development of territories that are home to the laboratory research on the deep geological storage of nuclear waste." ■

Louise Poirier

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