



Bioenergy Australia is an alliance of organisations
fostering biomass for energy and products

Newsletter

November 2008

Bioenergy Australia 2008 - Sustainable Bioenergy Opportunities for Australia

Australia's premier bioenergy conference, Bioenergy Australia 2008, will be held at the Sebel Albert Park, Melbourne, Victoria on **8-9 December**, with a **technical tour on 10 December**. The program will cover policies and programs, projects and project development case studies and emerging opportunities. The conference will consider many facets of bioenergy, including some 60 presentations on:

- Biomass sources and supply aspects
- First and second generation liquid biofuels
- Algae and other future feedstocks
- Pyrolysis bio-oil and bio-char
- Anaerobic digestion and livestock wastes
- Energy-from-waste
- Heat and power
- Overarching aspects of bioenergy, such as life cycle emissions and sustainability.

A moderated panel discussion will address the issue "Realising Sustainable Bioenergy Opportunities for Australia". Professor Philip Peck, from the International Institute for Industrial Environmental Economics, Lund University, Sweden, a member of the European Bioenergy Network of Excellence will provide the keynote address. The conference dinner speaker will be Tricia Caswell.

The technical tour will visit the following facilities: a waste water treatment plant where biogas is being used to generate power; a mobile small scale biodigester; a 2.2 MWe fluidised bed combustor which will be fuelled on wood biomass waste materials; a small scale wood fired boiler at a sawmill at Yarra Junction; and a small scale downdraft gasifier.

Last year this conference was attended by over 240 delegates and we expect a similar good attendance this year. The program includes a trade exhibition and technical Posters. The Program and Registration Form are available at: <http://www.bioenergyaustralia.org> or contact Jim Simpson, tel: (02) 9431 8641, email: bioenergy@conferenceaction.com.au or Stephen Schuck, tel: (02) 9416 9246, email: sschuck@bigpond.net.au.

Bioenergy Australia Membership Update

The Bioenergy Australia membership now includes 72 organisations. Recent new members are Southern Cross University, Central Highlands Agribusiness Forum, Agritechnology, Zektingroup, Ecofriendly Solutions, Carbon Dynamics, Origin Energy and Caltex Australia.

Bioenergy Australia wishes to further expand its membership and invites interested organisations to contact the Bioenergy Australia Manager, Dr Stephen Schuck on tel/fax (02) 9416 9246 or email: sschuck@bigpond.net.au if your organisation is interested in joining this government-industry bioenergy forum. Bioenergy Australia has a membership tier to cater for universities and for organisations with an annual turnover of less than \$2 million per annum.

Second Generation Biofuels Research and Development Program (Gen 2)

On 24 October the Minister for Resources, Energy & Tourism, Martin Ferguson launched the Second Generation Biofuels Research And Development Grant Program (Gen 2) which provides support for new biofuel technologies which address the sustainable development of the biofuels industry in Australia.

The \$15 million Grant Program is to be delivered over four years 2008-09 to 2011-12 with funds available from 2009-2010. Funds will be drawn from the \$500 million Renewable Energy Fund and range from \$1million to a maximum of \$5million. Grants will fund up to 50 per cent of eligible expenditure on approved projects and will be administered by the Alternative Fuels Section of the Department of Resources, Energy and Tourism.

Eligibility for the Gen 2 Grant Program applies to activities related to the entire production cycle including feedstocks and production aspects. Applications for the Gen 2 Grant Program close at 5pm (Australian Eastern Daylight Saving Time) *Friday, 30 January 2009*. The 26 page Program Guidelines and 15 page Program Application forms are available from DRET. Applicants are encouraged to discuss their eligibility for the Gen 2 Grant Program with a member of the Alternative Fuels Section of DRET before proceeding with their application. For further information contact the Gen 2 Contact Officer, Alternative Fuels Section, Department of Resources, Energy and Tourism. Contact details:
Tel: (02) 6276 1266, Email: alternativefuels@ret.gov.au Web: <http://www.ret.gov.au>.

Federal Government Programs and Initiatives

The Department of Innovation <http://www.innovation.gov.au> and AusIndustry are implementing a range of new programs and initiatives that should have relevance to bioenergy, including:

[Clean Business Australia](#) will provide \$240m to establish a partnership with business and industry to deliver energy and water efficient projects with a focus on productivity and innovation.

[Climate Ready](#) (\$75m – over 4 years) will be a competitive program providing grants from \$50,000 up to \$5m on a matching funding basis to support research and development, proof of concept and commercialisation activities to develop solutions to climate change challenges (see article below).

[Re-Tooling for Climate Change](#) (\$75m – over 4 years) – this new program will be targeted at assisting Australian manufacturers improve their production processes, reduce their energy use and cut carbon emissions (see article below).

[Green Building Fund](#) (\$90m – over 4 years) – this initiative will be designed to help Australian businesses implement cost saving energy efficiency measures through retrofitting and retro-commissioning of existing commercial buildings.

[Business Enterprise Centres](#) – the government will provide \$42m over 4 years to fund the delivery of low cost small business advisory services through nominated Business Enterprise Centres (BECs) throughout Australia. Thirty six BECs will be supported through this measure.

Contact your AusIndustry Customer Service Manager or the AusIndustry Hotline on 13 28 46 for further information.

\$75 million *Climate Ready* Program Open

The *Climate Ready* Program is part of the Federal Government's Clean Business Australia initiative which is a \$240 million commitment to develop energy and water-efficient projects that focus on productivity and innovation. *Climate Ready* Program is aimed at supporting Australian businesses to develop new products, processes and services that tackle the issue of climate change. It will do this by providing dollar-for-dollar support for research and development, proof-of-concept and early-stage commercialisation activities. As

such, a broad range of applications are expected in areas as diverse as water recycling and waste recovery as well as green building materials and a range of products, processes and services that monitor emissions or reduce energy use.

Businesses can also apply for grants involving nanotechnology and biotechnology that address the effects of climate change on humans and the environment.

Climate Ready offers two levels of funding: small grants (\$50,000 to \$500,000) to support small business and companies controlled by universities and public sector research organisations, and large grants (\$500,001 to \$5 million) for medium-sized businesses.

The Government anticipates that the *Climate Ready* program will not only encourage innovation in the field of addressing climate change but that it will increase the international competitiveness of Australian businesses and generate a benefit to the national economy.

Funding rounds have been established. The first four deadlines are:

Round One – (Closed) 4 September 2008

Round Two – 4 December 2008

Round Three – 12 March 2009

Round Four – 25 June 2009

An added element to this program is the assistance offered to businesses in the pre-application stage. Potential applicants can complete an online enquiry form, through the AusIndustry website, to help them determine their project's suitability for funding. Once this form is sent, they can discuss their project further with an AusIndustry customer service manager who can then help ensure the application contains all the relevant information.

For further details on the *Climate Ready* program, see the AusIndustry website at www.ausindustry.gov.au or call the hotline on 13 28 46.

Re-tooling for Climate Change grants program launched

Senator Kim Carr, Minister for Innovation, Industry, Science and Research has launched the Rudd Government's \$75 million Re-tooling for Climate Change grants program. Re-tooling for Climate Change will offer small and medium sized manufacturers grants ranging from \$10,000 to \$500,000 to help them reduce the environmental impact of their production processes.

Renewable Energy Funding Program Details Released

The Federal Government has released details of how it plans to operate a \$435 million program that aims to fast-track the development and commercialisation of renewable energy technologies. The details about how the program is intended to be operated and the eligibility requirements for projects to obtain funding from the program were contained in the draft 'Information Guide on the Renewable Energy Demonstration Program'. Public comments on the draft information guide closed on 5 November. To be eligible for funding from the program, projects must meet the program's objectives, including being a large-scale demonstration renewable energy project located in Australia; and reaching completion by 2014-2015. The Federal Government has set a goal for the program to stimulate over \$1 billion worth of investment in renewable energy technology, with the private sector contributing at least \$2 for every \$1 provided by the program. Funding will be subject to competitive, merit-based processes.

The Renewable Energy Demonstration Program is expected to provide funding to assist in the commercialisation of renewable energy technologies, processes and services including: solar; geothermal;

wind; biomass; hydro systems; ocean energy; and any other renewable energy source approved by the Minister for Resources and Energy. See: <http://www.ret.gov.au/energy/>

ATSE Biofuels Report Released – Recommendation for Biofuels Institute

In a major report on Biofuels, released on 17 November, the Australian Academy of Technological Sciences and Engineering (ATSE) recommends that a national Biofuels Institute be established. ATSE says that with strong governance, guaranteed funding and appropriately focused international linkages, the “impressive cadre” of Australian researchers in the bio-industries could come together far more effectively than through the fragmenting, competitive, grant-driven, step-by-step processes that characterise much of Australia’s RD&D. It calls for the Biofuels Institute to be established along the innovative lines of the recently announced Global Carbon Capture and Storage Institute, the National Low Emissions Coal Initiative and the soon-to-be-created Australian Solar Institute. These models, building on the clustering and industry-creating experiences of a number of Cooperative Research Centres, are expected to be able to go further than CRCs realistically can, ATSE says.

The report notes that recent world events have brought the issue of fuel supply into extremely sharp focus. Australia has limited transport fuels alternatives, but can advance strongly in Generation 2 biofuels.

Australia has modest prospects in the domain of Generation 1 biofuels – ethanol and biodiesel – where a fledgling industry is established, based mainly on food by-products, within an uncertain policy environment. While there is some room for growth, competition for scarce resources – including water and agricultural land well-suited for food production – make it unlikely that a substantial Generation 1 industry could further develop in Australia without market-distorting mandates or subsidies, despite the compelling need for transport fuels security.

But in the Generation 2 biofuels domain, where non-food resources dominate, Australia may be well-situated to establish a thriving future industry, based on the prolific and lower-value resources which it has in abundance. The significant potential for the economic conversion of lignocellulosics (woody plants) to ethanol and specialised algae strains to biodiesel warrant enhanced commitment to focused Australian RD&D in this sector – which should be aligned with the significantly greater RD&D efforts of other nations.

ATSE says that, despite its fragmented and underfunded competitive RD&D effort in the biofuels area, Australia has many worthwhile initiatives. The report notes that **Bioenergy Australia**, as the national industry body, provides an effective leadership role in drawing the industry domain together. The National Collaborative Research Infrastructure Strategy (NCRIS) Biofuels Project is a worthy program. A Biofuels Institute could improve mutual cooperation between Australian researchers and to build and sustain collaborative international arrangements.

ATSE urges the continuation of Australia’s engagement in the International Energy Agency’s Bioenergy Task 39, *Commercialising First and Second Generation Biofuels from Biomass*, current until 2010, and commends Australia’s membership of the Global Bio-Energy Partnership (GBEP) to further enhance meaningful international engagement.

ATSE takes a strong view that the use of biofuels to enhance Australia’s liquid transport fuel security must not be at the expense of food production. It also emphasises that present Generation 2 biofuel technologies are not cost-competitive, that an expanded RD&D effort is required and that biofuels research is fragmented and poorly coordinated and needs to be better-funded. It says Australia must enhance the knowledge base of its more promising biofuels resources and build on its significant existing strengths in biofuels research.

The report notes that Australia has limited biofuels production capacity which needs to be supported and that biofuels industry development must be directed not only to the production of economic transport

biofuels but also to creation of profitable co-products.

Australia needs to develop clear-cut long term policies for biofuels, including an effective balance between 'technology push' and 'market pull', evaluation of biofuels production and distribution infrastructure and related logistics, a major injection of RD&D funding and better research clustering and cooperation.

A large-scale Australian biofuels industry will have to demonstrate robust credentials in greenhouse gas emissions, land and water impacts, financial viability and social acceptability, it adds. The ATSE Report, Biofuels for Transport: a Roadmap for Development in Australia may be downloaded from: <http://www.atse.org.au/uploads/Biofuels.pdf>

US \$80 million investment in Plantation Energy

Plantation Energy and Denham Capital have announced that Denham will invest up to a US\$80 million equity in Plantation Energy. This equity investment will be used to fund their wood pellet manufacturing business, with their first plant currently under construction in Albany, Western Australia. This plant is scheduled to produce 150,000 tonnes wood pellets in the first year of operation, eventually rising to 250,000 tonnes per year. Plantation Energy are scheduled to give a presentation on their business at the Bioenergy Australia 2008 conference (see above).

Contact: Dick Allen, Plantation Energy Tel:08 9389 8799 Email: rallen@plantationenergy.com.au.

Biodiesel Trial in Ararat

Ararat Rural City Council is to commence an algae ponds trial for producing oil from algae which can then to be transformed into biodiesel. This could then lead to the establishment of a biodiesel plant in the area. Six, 30 square metre ponds containing different species of algae collected from local streams, dams and lakes will be set up on a trial site at NMIT. The aim of the trial is to determine which species of algae produces the best oil. It is anticipated that the algae could produce between 60,000 to 90,000 litres of oil per hectare per year.

source: <http://ararat.yourguide.com.au/news/local/news/general/algae-ponds-trial/1247987.aspx>

\$44m Investment in New Plantations

The Queensland Government will invest \$44.6 million over seven years to help its commercial plantation forest grower, Forestry Plantations Queensland (FPQ), establish 8200 hectares of new native hardwood sawlog plantations. This will increase FPQ's hardwood plantation estate to 20,000 hectares, making FPQ one of Australia's largest plantation owners with a total estate of more than 200,000 hectares.

New IPO to Fund Sydney's First Biomass-Fuelled Renewable Energy Generator

Biogen Ltd, a renewable energy company, lodged in September an application to list on the ASX. The funds raised by the company's Initial Public Offer will be used to progress plans to build Sydney's first solid biomass-fuelled renewable energy generator. Biogen's Sydney generator will be fuelled by woody green-waste, diverted from landfill. It will avoid the release of methane from diverted landfill and reduce the impact of burning fossil fuels. It is anticipated that the generator will provide power for more than 25,000 homes and save over 300,000 tonnes of greenhouse gas emissions annually. A copy of Biogen's prospectus can be viewed on www.biogen.com.au. The offer's close has been extended to 28 January 2009. For enquiries contact Ted Farrell on 0418 424 939 or call 02 9250 1888.

Mobile Biogas for Onsite Energy

Knetic Renewables Ltd is commercializing a mobile biogas technology that can provide industrial users with onsite power drawn from waste sources. They are raising \$20 million from investors to develop its first three power plants - an 8.5 MW plant in NSW, a 4 MW plant in northern Victoria and a 10 MW plant in north eastern Victoria. Knetic aims to have these plants, generating a total of 22.5 megawatts, commissioned within one and a half to two years, finance permitting.

The company has a Memorandum of Understanding (MOU) for the NSW project with a large multi-national's subsidiary and top five cattle feedlot producer. For the Victorian projects Knetic has signed a Heads of Agreement with Diamond Energy Pty Ltd to conduct a feasibility study and is now negotiating the MOUs to secure the two sites from a third party

Knetic's fuel handling system is reported to include gasification to assist with the disposal of biological and organic waste from the agricultural, foodstuff, and animal feed industries. The system involves liberating a 'producer gas' - a mixture of hydrogen, methane and carbon monoxide during the gasification process and serves as a high-energy, carbon neutral fuel that can be used as a substitute for fossil fuels.

Murdoch University Awarded \$2 million for Algae Development to Fuel

Western Australian researchers at Murdoch University, led by Professor Michael Borowitzka, have been awarded \$2 million from the Department of the Environment, Water, Heritage and the Arts to turn vast saline ponds of algae into biofuel. The groundbreaking research will develop and oversee large scale open ponds or 'photo-bioreactors' of algae growing in saline water in Australia, India and China - as part of Australia's commitment to the Asia-Pacific Partnership on Clean Development and Climate.

The Murdoch-led project will also investigate the anticipated low levels of carbon emissions produced in algae fuel production, and possible further energy generation from algae waste. The University of Adelaide, Parry Nutraceuticals in India and South China Institute of Technology are partnering Murdoch University in the research.

One of the research challenges will be to reduce the current cost of producing algal oil from its current costs of \$12 a kilogram, down to \$1 a kilogram by using well adapted algae strains and improving all the production processes. Michael Borowitzka is scheduled to give a presentation at the Bioenergy Australia 2008 conference (see above) in a dedicated Algae session.

Biomass on the Internet

The Internet provides a valuable source of information on biomass and allied topics. Below are some Internet addresses to supplement the 1,600 odd addresses given in the previous 32 issues of the Bioenergy Australia newsletters. These lists are consolidated as electronic links on Bioenergy Australia's web page at <http://www.bioenergyaustralia.org>. These links are available within an Excel file to allow interested persons to download the file and work with them off-line.

European Biomass Association

<http://www.aebiom.org>

Milena gasifier technology (ECN – The Netherlands)

<http://www.ecn.nl/en/bkm/rd-programme/syngas-and-sng/>

Rentech, Inc. (Fischer Trosch syndiesel)

<http://www.rentechinc.com>

World Bioenergy Association

<http://www.worldbioenergy.org>

Valcent High Density Vertical Algae Bioreactor

<http://www.valcent.net/s/Ecotech.asp?ReportID=183148>
BioDME project
<http://www.biodme.eu>
Algae media release BC Innovation Council
<http://www.bcic.ca/newsletter/124-july-2008/450-microalgae>
Solazyme, Inc. (Algae)
<http://www.solazyme.com>
DOE Joint Genome Institute
<http://www.jgi.doe.gov/>
Algae videos
http://peswiki.com/index.php/Videos:Algae_as_Fuel
American Ag & Energy Council
<http://www.agandenergy.com>
Gasification and use of wood gas in Jenbacher engines
<http://gasifiers.bioenergylists.org/jenbacher2008>
NSY Energy Engineering (gasifiers, briquetting)
<http://www.nsyenergy.com/>
Entimos biomass gasifier
<http://www.entimos.fi/inenglish.htm>
Costs of Biofuels article
<http://pubs.acs.org/cen/coverstory/85/8551cover.html>
Energy from Waste Water
<http://dnr.metrokc.gov/WTD/energy/index.htm>
Biogas Upgrading for Vehicles – IEA Bioenergy Task 37
http://www.biogasmax.eu/media/biogas_upgrading_2006_022437500_1023_22052007.pdf
Dual Chamber Bio-Digester System
<http://www.alvestaltd.com/bio-digester.aspx>
European Biofuels Technology Platform newsletter
<http://www.biofuelstp.eu/newsletter.html>
Biogas as Vehicle Fuel report
<http://213.131.156.10/xpo/bilagor/20040115134708.pdf>
Stirling Biopower
<http://www.stirlingbiopower.com/STIRLING/BASSE.swf>
FAO (2004) Unified Bioenergy Terminology (UBET)
<ftp://ftp.fao.org/docrep/fao/007/j4504e/j4504e00.pdf>
All Power Labs gasifier kits
<http://allpowerlabs.org/gasification/gek/index.html>
Sustainable Business Hub Sweden
http://www.sbhub.se/SbHub_eng/AboutSBH.html
Bioenergy List vehicle gasifiers
<http://gasifiers.bioenergylists.org/taxonomy/term/15>
EIN News
<http://energy.einnews.com/australia/>
Eat Low Carbon Food
<http://www.EatLowCarbon.org>
Biofuels – new source from bacteria
http://www.allaboutfeed.net/news/id10247501/new_source_for_biofuels_discovered.html
IEA Bioenergy Task 36 Energy from Municipal Solid Waste
<http://www.ieabioenergytask36.org/>
Sunshine Electricity
<http://www.sunshineelectricity.com.au>
Cellulosic Ethanol - Siemens
<http://www2.sea.siemens.com/Industry+Solutions/Chemical/Biofuels/Cellulosic.htm>
Moisture metre
http://www.gesensing.com/products/timbermaster.htm?bc=bc_ge_protimeter

Check Biotechnology
http://www.checkbiotech.org/green_Home.aspx

ICM Inc (US ethanol)
<http://www.icminc.com>

Crorey Gasifier
<http://www.croreyrenewable.com/>

Gasifiers List of Suppliers
<http://gasifiers.bioenergylists.org/gassupply>

Biomass tools US
<http://www.biomass.govtools.us>

India Biogas
<http://www.ruralcostarica.com/biogas-india.html>

Dual Chamber Digester System (Solwind – NZ)
<http://www.solwind.co.nz/digester.html>

Practically Green digesters
<http://dspace.dial.pipex.com/town/terrace/ae198/digesters%20gold%20series%20plan.html>

Biogas digesters
<http://www.rotaguido.it/eng/prodotti/recupero-biogas.html>

Husk Power Systems
<http://huskpowersystems.com/>

Danmark Stirling engines
<http://stirling.dk/>

Corn biomass ethanol article – crop that can break down its own cellulose
<http://www.technologyreview.com/Energy/20608/page1/?a=f>

BioGold Fuel Corporation (FT fuels)
<http://www.biogoldfuels.com/>

Global Bio Energy Program
www.globalbioenergy.org/programme_of_work.html

Syntec Biofuels
<http://www.syntecbiofuel.com/>

Coskata biofuels
<http://www.coskata.com/>

National Algae Association
<http://www.nationalalgaeassociation.com>

Evergreen Energy (Kompogas)
<http://www.evergreenenergy.com.au>

Collaboratory (renewable fuel)
<http://www.coloradocollaboratory.org/>

Solazyme algae to fuel
<http://www.solazyme.com>

Algae bioenergy
<http://www.sapphireenergy.com/>

Biomass Gasifier for fire hazard reduction in California
http://www.clean-air.org/Ed%20Burton%20Story/wood_chips_to_bio.htm

Crorey Biomass Gasifier
<http://www.croreyrenewable.com/>

Ekologs briquettes
<http://www.ecofriendlysolutions.com.au/pages/ekologs.asp>

Synthetic transportation fuels conference presentation by Nexant
<http://www.btltec.com/btlpaper/nexant.pdf>

Energy from waste a guide to opportunities in the UK (1.8 MB)
<http://www.ukinvest.gov.uk/UKTI-publications/4024575/en-GB.pdf>

US National Algae Association
<http://www.nationalalgaeassociation.com>

Ageratec AB - prefabricated biodiesel plant provider

<http://www.ageratec.com>
Process Industry Supplier Registry (USA)
<http://www.processregister.com/>
Altus Renewables
<http://www.altusrenewables.com>
Nationals Algae Association (USA)
<http://www.nationalalgaeassociation.com>
BC bioenergy strategy (Canada)
<http://www.energyplan.gov.bc.ca/bioenergy/>
National Biomass Producers Association
<http://www.biomass-producers.com>
Renewable Oil Industry (US)
<http://www.renewableoil.com>
Taurus Energy
<http://taurusenergy.eu/EN>
Lignol Innovations
<http://www.lignol.ca>
Ontario's forest biofibre policy
http://www.mnr.gov.on.ca/en/STEL02_168317.html
Ontario's Innovation Agenda and the Bioeconomy.
http://www.mri.gov.on.ca/english/news/Biofuel070308_bd2.asp
Anaerobic Digester Report for MSW – ‘Current Anaerobic Digestion Technologies Used for Treatment of Municipal Organic Solid Waste’
<http://www.ciwmb.ca.gov/Publications/Organics/2008011.pdf>
HAASE anaerobic digestion technology
<http://www.haase.de> .

International

USDA & DOE Release National Biofuels Action Plan

On 7 October the US Department of Agriculture (USDA) and Department of Energy (DOE) released their National Biofuels Action Plan (NBAP), an interagency plan detailing the collaborative efforts of Federal agencies to accelerate the development of a sustainable biofuels industry.

The NBAP was developed in response to President Bush's plans to change the way America fuels its transportation fleets in the 2007 State of the Union Address. The President's "Twenty In Ten" goal calls for cutting U.S. petrol consumption by 20 percent over the next 10 years by investing in renewable and alternative fuel sources, increasing vehicle efficiency and developing alternative fuel vehicles.

The ambitious alternative fuels production target was later followed by the Energy Independence and Security Act of 2007 (EISA) and the Food, Conservation, and Energy Act (FCEA) of 2008, which responded to the President's "Twenty in Ten" challenge with mandatory funding of more than \$1 billion for such energy activities as loan guarantees for cellulosic ethanol projects as well as other renewable energy and energy-efficiency-related programs.

The NBAP was developed and is being implemented by the Biomass Research and Development (R&D) Board. Co-chaired by USDA and DOE officials, the Board was created to coordinate the activities of federal agencies involved in biomass research and development.

To enhance the impact of federal biofuels investments and enable attainment of the Renewable Fuel Standard (RFS), the NBAP outlines interagency actions and accelerated federally supported research efforts in seven areas including:

- Sustainability
- Feedstock Production
- Feedstock Logistics
- Conversion Science and Technology
- Distribution Infrastructure
- Blending
- Environment, Health and Safety

Interagency working groups have been chartered with near term deadlines to deliver such key results as: the development of science-based sustainability criteria and indicators, 10- year R&D forecasts for research to develop cost-effective methods of producing cellulosic biofuels from non-food based feedstock, to advance these next generation biofuels to commercialization, and recommendations on infrastructure issues.

DOE has dedicated more than \$1 billion to research, development, and demonstration of cellulosic biofuels technology through 2009. Additionally, since 2006, USDA has invested almost \$600 million for the research, development and demonstration of new biofuels technology. For more information about the NBAP and other USDA and DOE efforts, visit the USDA's Energy webpage and the Office of Energy Efficiency and Renewable Energy.

Source: <http://www.energy.gov/news/6633.htm>

New Zealand Parliament approves biofuel legislation

Prior to the recent election, the Parliament of New Zealand approved a biofuel bill that requires oil firms to provide sustainable biofuel at a set percentage of their total sales. Companies are required to now start supplying biofuel at 0.5% blend, rising to 2.5% by 2012.

Fischer Tropsch Biofuels Company Formed in Canada

ETG4G Resources Ltd. of Canada has announced the formation of a wholly owned subsidiary, Alternative Fuels Corporation, which will work towards producing synthetic fuels from municipal waste and stranded natural gas using a new generation Fischer Tropsch technology developed by the Centre of Materials and Process Synthesis (COMPS) at The University of Witwatersrand in Johannesburg, South Africa. The new Fischer Tropsch is reported to have a lower capital cost than traditional Fischer Tropsch plants; have a quicker start-up time due to smaller scale and modularity; have rapid scalability; have a significantly lower CO2 output per unit of production; and require less water.

UK Portbury Dock Renewable Energy Plant

E.ON UK plans to invest around US\$557.8 million to build a 150 MW wood fired biomass plant at the Port of Bristol. The proposed plant will generate enough power for more than 200,000 homes by burning wood that would largely be brought to the plant by boat, the company said in a statement. If the project gets approval, construction is expected to start in 2010, with commissioning in 2013 and full operation would be reached in 2014.

Municipal Solid Waste to Biofuels Project for Canada

The world's first industrial scale municipal solid waste to biofuels facility is set to be constructed in Edmonton, Canada following a 25 year agreement with GreenField Ethanol and Enerkem, a biofuels

technology company. The C\$70 million biofuels facility will initially produce 36 millions litres of biofuel per year. Construction is expected to begin early 2009, with methanol production starting in 2010, and ethanol production commencing in 2011. The city of Edmonton and the government of Alberta are contributing \$20 million to the facility through the Alberta Energy Research Institute. The city of Edmonton will also contribute \$50 million to related processing and research facilities. The Alberta Energy Research Institute's total contribution will be \$29 million.

Scion, Verenium Receive Research Grant

Scion, the New Zealand-based Crown Research Institute and its research partner, US-based Verenium Corporation have received a three-year \$5.4 million grant from the New Zealand Foundation for Research, Science and Technology.

The funding will be used to continue research under the New Zealand Lignocellulosic Bioethanol Initiative, a trans-Pacific research collaboration which includes Scion and AgResearch, New Zealand government owned science research businesses, Carter Holt Harvey, New Zealand's largest pulp and paper producer, and Verenium. The grant will evaluate the viability of producing cellulosic ethanol from New Zealand's softwood forest resources. Pilot-scale trials on pre-treatment and enzymatic processing will be conducted. The target date for the initiative's first commercial facility is 2015.

Source: Biomass Magazine

CHEMREC to Build World's First BioDME Biofuels Plant

The European Union BioDME project, involving seven international partners was recently launched. The project, under the EU's Seventh Framework Program (FP7), with support from the Swedish Energy Agency and co-financed by project partners has an estimated cost of €28 million. Chemrec will build and operate the plant where the dimethyl ether (DME) will be produced by gasification of black liquor, a byproduct of a pulping process.

Dimethyl ether, is a non-toxic, environmentally benign compound already used extensively as propellant gas in spray cans. DME, has potential to become a highly competitive renewable alternative to today's fossil fuels. DME from biomass is characterized by high energy efficiency and minimal climate impact.

Chemrec and Haldor Topsøe will design and build the DME plant, located at the Smurfit Kappa linerboard mill in Piteå, Sweden. It is anticipated that within 18 months Chemrec will produce 4-5 tonnes of DME daily. The Volvo Group will develop fourteen DME-driven vehicles for which Delphi and Volvo will develop fuel injection systems. DME vehicles have very low exhaust emissions, due among other factors to soot-free combustion (DME does not have carbon-to-carbon chemical bonds). Preem will implement the DME distribution and build filling stations while Total will develop fuel and lube oil specifications.

For more information see: <http://www.chemrec.se> and the BioDME project at <http://www.biodme.eu>.

Biomass Thermal Power Plant for France

A new €67 million 30 MW electricity and 30 metric tonnes per hour of steam biomass thermal power plant will be built at chemical manufacturer Solvay's Tavaux site in France. The steam will be used in manufacturing operations and the electricity will be sold to Electricité de France (EDF). The agreement to supply energy was approved by French authorities and it is expected to reduce the chemical group's impact on the environment by cutting fossil fuel consumption and reduce CO₂ emissions by 20 percent. The biomass for the new plant will come from the recycling of food waste and also from logging residues from the nearby forestry industry.

Source: Plastics & Rubber Weekly

US DOE Announces Two Small-Scale Biorefinery Awards

Flambeau River Biofuels, LLC and Verenum Biofuels have been awarded US\$40 million over five years by the US Department of Energy (DOE). Grants were awarded to Flambeau River Biofuels, LLC to produce approximately 23 million litres per year of Fischer-Tropsch diesel fuel from byproducts from an adjacent paper and pulp mill. Verenum Biofuels has been awarded funding to produce 5.7 million litres per year of cellulosic ethanol from various waste products such as sugar cane bagasse and other agricultural residues. The biorefineries are to be located in Park Falls, WI and Jennings, LA respectively. Source: <http://www.energy.gov/news/6413.htm>

USDA and DOE Awards for Cellulosic Biofuels

The USDA and DOE have awarded 10 universities representing a total of eight states more than US\$10 million for research in biomass genomics to further the development of cellulosic biofuels. Under the joint DOE-USDA biomass genomics research program that started in 2006, DOE's Office of Biological and Environmental Research will provide \$8.8 million and USDA's Cooperative State Research, Education and Extension Service will provide \$2 million over a three year period. These grants will broaden the sources of energy from many crops as well as improve the efficiency and options among renewable fuels. Source: <http://www.usda.gov/wps/portal/usdahome?contentidonly=true&contentid=2008/07/0202.xml>

Drax Enters Agreement for Three 300 MW Bioenergy Power Plants for UK

Drax Group PLC, the parent company of Drax Power Ltd the owner/operator of a UK 4,000 MW coal-fired power plant has signed a US\$3.2 billion joint development agreement with Germany-based Siemens to build, own, and operate three 300 MW dedicated biomass-fired power plants in the U.K.

Drax will take a 60 percent stake in the venture and will manage and operate the biomass business. Drax will also be responsible for all biomass procurement and trading. The plants are expected to use Siemens' turbine technology. All three plants will use the same design and technologies.

Of the three plants, one will be located on a 30-acre site at Immingham in North East Lincolnshire and another on a 40-acre site at Hull in the East Riding of Yorkshire, England, according to the company. A third site is being considered, as well as additional land at the existing coal-fired Drax Power Station in the U.K. The sites being considered are deep water port sites. To date no commitments to construction contracts or financing have been made. Drax expects to finalize these arrangements over the next 12-18 months, the company said.

Construction for the first plant is expected to begin in 2010 with operations beginning in 2014. According to Drax, it currently provides enough power to meet seven percent of the U.K.'s electricity needs. When all three biomass plants are operational, it is estimated that Drax will be responsible for supplying up to 10 percent of the U.K.'s total electricity.

USDA Report "U.S. Biobased Products Market Potential and Projections Through 2025"

The USDA's Office of Energy Policy & New Uses has released a report that states that the development of the biobased products industry can be expected to increase investment in manufacturing facilities in rural regions, thereby expanding employment opportunities and increasing the demand for farm products. The global chemical industry is projected to grow 3-6 percent per year through 2025 with biobased chemicals expected to account for 22 percent of the market by 2025. It is expected that the shift to high performance biobased products will be linked to the development of biorefineries capable of producing biofuels as well as biobased products. However, to achieve the forecasted growth, a number of

scientific developments must take place including improved fermentation processes, integration of biomass conversion into a larger scale, and diversifying feedstocks to a broad range of plant and animal material including waste. It is important to note that this study was based on data and assumptions as of 2006, and is not reflective of recent market developments. The 294 page, 10 MB report may be downloaded from: <http://www.usda.gov/oce/reports/energy/BiobasedReport2008.pdf>

OriginOil Patent for Extracting Oil from Microalgae

US company, Origin Oil Inc. has filed an application for a fourth patent, “Lysing and Extraction System for Microorganisms.” The patent details a process to extract oil from algae with high energy efficiency, without requiring the use of chemical solvents. This system builds on the company’s first patent, Quantum Fracturing™ in which algal cells are broken down by ultrasound from intense fluid fracturing. Algal cell walls are broken down after receiving low wattage, frequency-tuned microwave bursts. Quantum fracturing is applied to these pre cracked cells to complete oil extraction making low energy and environmentally-safe algae oil production a reality. The OriginOil website is <http://www.originoil.com>.

New Strain of Bacteria for Ethanol Production from Lignocellulosic Biomass

Researchers at TMO Renewables Ltd, from Guildford, UK, are reported to have successfully developed a new strain of bacteria that can break down straw and agricultural plant waste, domestic hedge clippings, garden trimmings and cardboard, wood chips and other municipal waste to convert them all into useful renewable fuels for the transport industry. They claim that the new strain of bacteria allows ethanol to be produced much more efficiently and cheaply than in traditional yeast-based fermentation. The new microorganism, called TM242, can convert the longer-chain sugars from woody biomass materials into ethanol. This thermophilic bacterium operates at high temperatures of 60°C-70°C and digests a wide range of feedstocks very rapidly.

Source: Carbon Free.

Danisco and Goodyear to Develop Bioisoprene

Danish company Danisco has teamed up with the Goodyear Tyre and Rubber Company in a US\$50 million, three year project to develop a bio-based alternative to the petroleum-derived compound isoprene. The product called BioIsoprene is targeting the world market for high purity isoprene of US\$1 billion to \$2 billion per year. They are aiming for the commissioning of the first large manufacturing plant in 2012.

100 MW Power Plant for Austin, Texas, USA.

Nacogdoches Power LLC, a joint venture between Energy Management Inc. of Boston and BayCorp Holdings of Portsmouth, New Hampshire proposes to build and operate a 100 MW wood-waste-fuelled biomass power plant in Sacul, Texas. The power plant would be one of the largest in the USA. The plant is scheduled to begin commercial operation in mid 2012. Austin City Council has given Austin Energy approval to enter into a US \$2.3 billion contract to purchase all the power produced over a 20-year period. The power purchase agreement support Austin City Council’s goal of having Austin Energy produce 30 percent of its power from renewable sources by 2020. See: <http://www.austinenergy.com> and <http://www.nacogdochespower.com>.

New Bioenergy Research Institute Launched at Aston University, UK

The European Bioenergy Research Institute (EBRI) has been launched at Aston University, paving the way for world-class research into all aspects of bioenergy. It will carry out international research into all aspects of bioenergy, ranging from fundamental research in the field through to collaborating with industry

in developing the deployment of innovative technologies. It will also offer unique opportunities for joint activities between industry and researchers from all over Europe.

EBRI is led by Professor Andreas Hornung and will promote and manage the implementation of bioenergy technologies at a local, national and European level. It will also provide operational and test facilities for industry and provide heat and power to Aston Science Park. The EBRI's activities and complementary research at Aston University will integrate the work of local and national Universities and act a focus for pan-European activities on scientific and technological aspects of biomass production, conversion and utilisation of products used for renewable power, heat, transport fuels and chemicals. For further information on EBRI, contact Professor Andreas Hornung, Email a.hornung@aston.ac.uk.

Boeing and Airlines Commit to Biofuel

Boeing and nine airlines comprising Air New Zealand, Virgin Atlantic Airways, Air France, All Nippon Airways (ANA), Cargolux, Gulf Air, Japan Airlines, KLM and SAS have agreed to speed up the development of sustainable, second-generation biofuels for use in the commercial aviation industry by joining the Sustainable Aviation Fuel Users Group. The group, which includes leading refining technology developer Honeywell's UOP, requires any biofuel used by its members to perform as well as or better than traditional jet fuel while having low carbon emissions. Members also undertake to use only renewable fuel sources that require minimal land, water and energy to produce, and that do not compete with food or fresh water resources. The aircraft maker and airlines will receive advice and support from both the WWF and the Natural Resources Defence Council.

The Netherlands' 36.5 MW Poultry Litter Fuelled Power Plant

In September 2008 the Dutch Minister for Agriculture opened the BMC Moerdijk 36.5 MW chicken litter power plant, located in the Moerdijk industrial area. Construction began in late August 2006. The facility is the largest of its kind in the world and the first power station on the European continent to produce renewable electricity from poultry litter on such a large scale. Annually, the power plant will convert 440,000 tonnes of poultry litter into electricity, absorbing more than one third of the Netherlands' excess chicken manure. The plant will produce over 270 million kilowatt-hours of electricity a year, enough to supply power to some 90,000 households. The plant is joint venture of Netherlands-based Delta N.V., a multi-utility company, ZLTO, Austrian Energy and Environment AG and Duurzame Energieproductie Pluimveehouderij (DEP), a 629-member Netherlands poultry farmer cooperative. DEP will supply the litter by trucks, mainly from the southern part of The Netherlands. The power plant offers farmers an environmentally-friendly and economically viable long-term sales channel to dispose of their poultry litter. The ashes are rich in phosphor and potassium and will be sold as a by-product for use as a fertiliser. At a construction cost of 150 million Euros, the facility will employ a total of 25 staff. The facility will be carbon neutral because carbon dioxide emissions from the plant will be equal to what would have been emitted if the litter were used as manure in fields. See: <http://www.bmcmoerdijk.nl/index.php>

Forthcoming Events

- Clean Energy Council Conference & Exhibition 2008
24-26 November 2008
Gold Coast Convention & Exhibition Centre, Gold Coast, Queensland.
<http://www.cleanenergycouncil.org.au>
- IEEE International Conference on Sustainable Energy Technologies 2008
24 – 27 November 2008
Singapore
<http://www.icset2008.org>

- Asia Pacific Regional ISES 2008
25-28 November 2008
Sydney Convention & Exhibition Centre
<http://www.isesap08.com> Email: isesap08@icms.com.au
- Sugar and Ethanol Asia - Improving Market Fundamentals to Boost the Industry
26 - 27 November 2008
Sheraton Grande Sukhumvit Hotel, Bangkok, Thailand
<http://www.agra-net.com>
- International Conference on Biomass Energy Technologies
29 November to 1 December 2008
Guangzhou, China
<http://www.newenergy.com.cn/gz/down.asp>
- 6th international UFOP/BBE-Conference Fuels of the Future
1-2 December 2008
Berlin, Germany
<http://www.fuels-of-the-future.com>
- 5th Annual 2008 Canadian Renewable Fuels Summit
1 – 3 December 2008
Hilton Lac-Leamy Hotel, Gatineau-Ottawa, Québec, Canada
<http://www.crf2008.com>
- 5th Annual 2008 Canadian Renewable Fuels Summit - Growing Beyond Oil
December 1 - 3, 2008
Hilton Lac-Leamy Hotel, Gatineau-Ottawa, Québec, Canada
<http://www.crf2008.com>
- 2nd Annual Biorefining for the Pulp and Paper Industry 2008
2-3 December 2008
Radisson SAS Royal Hotel, Helsinki, Finland
<http://www.biorefiningforpulpandpaper.com>
- International Algae Congress
3 - 4 December 2008
'Het West-Indisch Huis' Amsterdam, Netherlands
<http://www.algaecongress.com>
- **Bioenergy Australia 2008 Annual Conference**
8-10 December 2008
Sebel Albert Park, Melbourne
Web: <http://www.bioenergyaustralia.org>.
Contact: Stephen Schuck email: sschuck@bigpond.net.au.
- 2008 CEEM Annual Conference "The evolving context for Australian Energy and Climate Policy: what's coming, what's changed, what's missing"
12 December 2008
UNSW Kensington Campus, Sydney.
To register call Dr Rob Passey, email: r.passey@unsw.edu.au.
- 5th International Conference on Combustion, Incineration/Pyrolysis and Emission Control
16-19 December, 2008
Chiang Mai, Thailand
Email: srk@kmitnb.ac.th
- Sixth Annual National Biodiesel Conference & Expo (USA)
1-4 February 2009
San Francisco, California, USA
<http://www.biodieselconference.org/2009/default.asp>
- BiomassWorld
9-10 February 2009
Jakarta, Indonesia
<http://www.futureenergyevents.com/biomass>
- BioPower Generation - Sustainable large scale power generation from biomass

- 12-13 February 2009
Brussels, Belgium
<http://www.greenpowerconferences.com/biofuelsmarkets/biopower.html>
- European Pellet Conference
25 -26 February 2009
Wels, Austria.
<http://www.wsed.at/>
 - RFA 14th Annual National Ethanol Conference
23-25 February 2009
Henry B. Gonzales Convention Center, San Antonio, Texas, USA
<http://www.nationalethanolconference.com>
 - Bioenergy - II: Fuels and Chemicals From Renewable Resources
March 8-13, 2009
Rio de Janeiro, Brazil
<http://www.engconfintl.org/9af.html>
 - 2nd Annual Canadian Renewable Energy Workshop
9-11 March 2009
Regina, Saskatchewan, Canada
Email: CREW@bbiinternational.com
<http://www.crew2009.com>
 - 3rd International Energy Farming Congress
10 - 12 March 2009
Papenburg, Germany.
Contact: Reent Martens, Tel.: +49 (0) 5951-9893-14 Email: martens@3-n.info
<http://www.3-n.info>
 - World Biofuels Markets
16 - 18 March 2009
Brussels Expo Centre, Belgium
<http://greenpower.msgfocus.com/q/1oMZk0osiGQvr/wv>
 - BIT Life Sciences' 2nd Annual World Congress of Industrial Biotechnology 2009
Theme: Innovative Biotechnology for Sustainable Bio-economy
5-7 April 2009
Seoul, South Korea
<http://www.bit-ibio.com>
 - Biofuels, Bioenergy and Carbon Trading
21-22 April 2009
Melbourne Park Function Centre in conjunction with the APPITA Annual conference
<http://www.appita.com.au>
 - International Biomass Conference and Trade Show (BBI Event)
28-30 April 2009
Oregon Convention Center, Portland, Oregon, USA.
<http://www.biomassconference.com>
 - EcoForum Conference & Exhibition
28 - 30 April 2009
Australian Technology Park, Sydney
Email Quitze@ecoforum.net.au
<http://www.ecoforum.net.au/2009/>
 - 31st Symposium on Biotechnology for Fuels and Chemicals.
3-6 May 2009
San Francisco, USA
<http://sim.confex.com/sim/31st/cfp.cgi>
 - 17th European Biomass Conference & Exhibition
29 June to 3 July 2009
Congress Center of Hamburg, Germany
<http://www.conference-biomass.com/>

- The Sixth Annual World Congress on Industrial Biotechnology & Bioprocessing
19-22 July 2009
Montreal, Quebec, Canada
<http://www.bio.org/worldcongress>
- IEA Bioenergy Multitask Meeting
Biofuels and Bioenergy: A changing climate
24-28 August 2009
University of British Columbia, Vancouver, Canada
Contact: emmanuel.ackom@ubc.ca
<http://www.task39.org>
- Bioenergy 2009 - Sustainable Bioenergy Business
31 Aug to 4 September 2009
Jyvaskyla, Finland
Email: bioenergy@finbio.fi
- World Congress on Oils & Fats & 28th ISF Congress
27-30 September 2009
Sydney, Australia
<http://www.isfsydney2009.com>

Residues

Coal-biomass cofiring handbook: Following the closure of the Cooperative Research Centre for Coal in Sustainable Development (CCSD), Bioenergy Australia has acquired the distribution rights for the 284 page Coal-Biomass Cofiring Handbook, produced by the former CRC. Please contact Dr Stephen Schuck, Bioenergy Australia Manager if you wish to acquire a copy of this handbook.

Federal Government announces new \$100 million ‘Global Institute’: A new \$100 million ‘Global Institute’ has been announced by the Federal Government. The Institute would be tasked with accelerating the development of carbon capture and storage technology through facilitating demonstration projects and identifying and supporting research into the technology. The Rudd Government plans to use the Institute to work with other countries to help reduce the amount of carbon dioxide gas released into the atmosphere, and would contribute up to \$100 million per annum towards the institute’s operation.

Obama Administration Support for Clean Energy: Incoming President Elect, Barack Obama plans \$150 billion in investment over 10 years to create 5 million jobs in the auto and clean-energy industries.

PGE aims to turn Boardman coal-plant pollution into biofuel: Portland General Electric is testing how to use emissions from its Boardman coal plant to grow algae for biofuel production. PGE and renewable energy developer Columbia Energy Partners have begun a pilot project for the algae venture at the utility’s Boardman facility in Morrow County, Oregon. The 600 MW Boardman facility, generates about one-fifth of PGE’s power and is the state’s largest stationary source of CO₂. When the facility is running at full scale it could use up to 60 percent of the emissions during daylight hours and produce 76 million litres of biodiesel annually.

Cars powered by solid biomass materials: A gasification technology that enables regular vehicles to be powered with a wide range of solid biomass materials, like wood, switchgrass, crop residues and broiler litter has been developed by Wayne Keith, a partner in Renewable Energy Systems LLC (RES) USA. Auburn University is partnering with RES in a Coast-to-Coast and Back tour in such a vehicle, starting in South Carolina. See: <http://www.ag.auburn.edu/agrn/bio-truck/> and <http://www.escapefromberkeley.com/>

2nd Austrian National IEA Bioenergy Task 39 Liquid Biofuels Workshop: On 9 September 2008 a national workshop on “Transport Biofuels Research in Austria” was organised by the Austrian representative of IEA Bioenergy Task 39, Commercialising First and Second Generation Biofuels. The 24

presentations given may be downloaded via the following link: http://www.abc-energy.at/pdfs/iea_workshop/program_final.pdf. Also: http://www.abc-energy.at/aktuell_38.htm.

Algae-based technology receives US\$3 million: Heliae Development LLC is investing US\$1.5 million in an Arizona State University research program to develop strains of algae that can be used to produce kerosene-based aviation fuel. Research will focus on the commercial production of kerosene from algae using patented technologies developed by Professors Qiang Hu and Milton Sommerfeld at Arizona State University's Laboratory for Algae Research & Biotechnology.

Current anaerobic digestion technologies used for treatment of municipal organic solid waste:

A report from the California Integrated Waste Management Board provides an overview of the state of anaerobic digestion (AD) technologies for the treatment of municipal solid waste. In addition to detailed process descriptions, performance, economic data and references, the report describes AD deployment in Europe, Australia, Japan and Canada. The 90 page document Current Anaerobic Digestion Technologies Used for Treatment of Municipal Organic Solid Waste (1.8 MB) can be downloaded from: <http://www.ciwmb.ca.gov/Publications/Organics/2008011.pdf>

Second coming of Biofuels: An article 'The Second Coming of Biofuels' covers green diesel from vegetable oils and animal fats. It covers UOP's development of green diesel using alternative processing to conventional biodiesel. <http://discovermagazine.com/2008/aug/02-the-second-coming-of-biofuels>

Sapphire Energy raises over \$100 million for algae crude: San Diego-based Sapphire Energy has raised over US\$100 million from investors to produce crude oil from algae. They hope to make commercial quantities of the fuel within five years for a cost of US\$50 - \$80 per barrel.

Iogen and Royal Dutch Shell sign deal on cellulosic ethanol: Ottawa-based Iogen has made the first shipment of cellulosic ethanol under a deal with The Netherlands' oil giant Royal Dutch Shell, sending 100,000 litres of an initial 180,000 litre order from Shell. Produced from wheat straw at Iogen's Ottawa demonstration facility, the cellulosic ethanol is being purchased by Shell for use in upcoming fuel applications. http://www.ioegen.ca/news_events/press_releases/2008_10_25.html

Technology that Converts Plant Fibers to Biofuel Commercialised: A Kansas company has licensed Michigan State University technology that uses enzymes from a microbe in a cow's stomach to create plants that can be more efficiently turned into biofuel. Professor Mariam Sticklen, MSU has discovered a way to insert a gene from a bacterium in a cow's stomach into a corn plant so the fibre in corn leaves and stalks can be more easily converted into simple sugars that can then be fermented into biofuels or other valuable chemicals. For more information www.news.msu.edu/story/872 ; www.bioeconomy.msu.edu ; www.technologies.msu.edu.

Enzymes Development: Novozymes has been awarded a US\$12.3 million contract by the U.S. Department of Energy (DoE) to improve the enzymes necessary to produce cellulosic ethanol. Under the terms of the 2.5-year contract Novozymes has committed to increase the efficiency of the enzymes used in the conversion of cellulosic biomass to ethanol by two-fold.

Isle of Wight energy from waste plant: Construction of a new, green energy from waste plant is nearing completion on the Isle of Wight. A new £8 million gasification plant – the first of its type in the UK – will generate 2.3MW of electricity, enough to power more than 2,000 homes on the island when the project becomes fully operational within a year. <http://www.energ.co.uk/?OBH=490&ID=143>

Norway start-up to produce synthetic diesel: A new company in Norway is building a prototype plant to test a process for producing diesel from woody biomass. Xynergo plans to build the plant, which will produce synthetic diesel from woody biomass, at Norske Skog Follum in Norway. The company, which is owned by a number of firms including Norske Skog and Statskog says that the fuel will be almost carbon neutral and hope that the plant will be operational by 2010. http://www.biofuelsmedia.com/news_link.php?new=125

New Biomass To Be Built in Belgium: Foster Wheeler Ltd. has announced that its Finnish subsidiary has been awarded a contract by Prokon Nord Energiesysteme GmbH for a 26 MW circulating fluidized-bed (CFB) steam generator to be located in Oostrozebeke, Belgium.

<http://www.renewableenergyworld.com/rea/news/story?id=53257>

Acting head of Queensland Office of Clean Energy appointed: The Queensland Government has appointed Dr John Cole, as the acting head of the new Office of Clean Energy. The State Government has set up the Office of Clean Energy to explore renewable energy and other methods for reducing the state's carbon footprint. Dr Cole has previously held the position of Executive Director of the Sustainable Industries Division for the Queensland Environmental Protection Agency. Dr Cole opened the Bioenergy Australia 2007 conference on the Gold Coast last year.

Tanzania to produce 100 million litres of ethanol a year by 2012: Sekab have set up a 200 ha farm to grow cane seedlings and will start production next year. Sekab plans to establish several plantations in Tanzania over the next 10 to 15 years. At a cost of between US\$200 million and US\$300 million Sekab hopes to produce 100 million litres of ethanol a year in Tanzania by 2012.

Report Released Detailing Biomass Harvesting and Fire Prevention: The US Institute for Agriculture and Trade Policy (IATP) released a report in June which concluded that forest biomass harvests conducted in Minnesota show that harvests could reduce the cost of fire prevention while increasing biomass fuel supply. Sources: <http://www.iatp.org/iatp/press.cfm?refID=103060> (pdf format)
<http://forestrycenter.org/library.cfm?refID=103061> (pdf format)

Royal Dutch Shell enters into new research agreements: Royal Dutch Shell plc has entered into six new research agreements lasting between two and five years that will be part of the company's program to complement its biofuel research and development.

First poultry litter fuelled power plant: In the United States, Fibrominn, a subsidiary of Fibrowatt LLC, opened the nation's first poultry litter-fuelled power plant in Benson, Minn., in 2007. The 55 MW facility uses more than 500,000 tons of litter annually, supplied mostly by local poultry farmers.

Honeywell and Ensyn Corp sign agreement: UOP, a Honeywell company has signed a letter of intent with Ensyn Corp to offer technology and equipment to convert second-generation biomass into oil for power generation, heating fuel and eventually for conversion into transportation fuels.

L.L Biofuel Namibia (PTY) Ltd. and Evogene Ltd. establish a company: L.L Biofuel Namibia (Pty) Ltd. of the Leviev Group and Evogene Ltd. listed on the Tel Aviv stock market, together with Orfuel Inc., a US subsidiary of Ormat Industries Ltd, have signed an agreement to establish a new company focused on the growth of specialized castor plants for use as feedstock for biodiesel.

Biomass energy the answer to China's pollution crisis?: A study in AMBIO, a journal of the human environment, proposes that China could reduce pollution by as much as 46-60 percent in part through the use of biomass energy. China has the highest SO2 emissions in the world and ranks second in CO2 emissions. To read the synopsis, "Bioenergy: Future Direction of China's Energy and Environment Integrated Strategy?," view: <http://www.allenpress.com/pdf/i0044-7447-37-2-136.pdf>. AMBIO is a non-profit publication of the Royal Swedish Academy of Sciences and addresses the scientific, social, economic, and cultural factors that influence the condition of the human environment.

Biodigesters: A liberally illustrated handbook on small scale biodigesters from Bolivia (is Spanish) is at: http://cid-129808b0d5acb773.skydrive.live.com/self.aspx/biogas/Guia%7C_biodigestores%7C_jmh.pdf

Latest Developments in the Use of Wood Gas in Gas Engines: A 50 slide presentation entitled Latest Developments in the Use of Wood Gas in Gas Engines from the IDGTE Toronto, Canada; 12. June 2008 by Thomas Elsenbruch, GE Jenbacher, Jenbach, Austria is at http://www.idgte.ca/Pagemill_Resources/Presentations_0608/GEJenbacher%20Presentation.pdf

Hawaiian coal-fired plant being converted to burn biomass: The Hu Honua 24 MW Bioenergy Facility in the community of Pepeekeo, on the Big Island's Hamakua Coast is financed, operated and majority-owned by MMA Renewable Ventures. The power station will convert locally grown biomass into electricity, supporting the state's target of 20 percent renewable energy by 2020. See: <http://www.mmarenewableventures.com>.

BC's Bioenergy Strategy: British Columbia's (BC's) Bioenergy Strategy, was released early 2008 and sets objectives to reduce BC's greenhouse gas emissions and strengthen its long-term competitiveness and electricity self-sufficiency to achieve the province's climate goals and economic objectives. The 20 page bioenergy strategy is at: <http://www.energyplan.gov.bc.ca/bioenergy/>

Fuel production starts at biomethane plant: Gasrec, BOC, a subsidiary of The Linde Group and waste management company SITA UK, have announced that production of liquid biomethane (LBM) fuel is underway at Gasrec's plant on SITA UK's Albury landfill site in Surrey, UK. The Gasrec process cleans the landfill gas of all impurities before methane is separated and liquefied.

Covanta acquires two biomass facilities in Maine: The two nearly identical biomass facilities, located in West Enfield and Jonesboro, Maine, USA will add a total of 49 MW to Covanta's renewable energy portfolio, which currently includes six biomass facilities and 38 waste-to-energy facilities. Covanta has agreed to acquire the plants for a total of approximately US \$87 million.

Canadian Biomass Gasifier: Nexterra Energy of Vancouver, Canada has been selected by tissue manufacturer, Kruger Products to supply a fixed-bed biomass gasifier to its tissue mill at New Westminster, British Columbia. The system will gasify wood waste to displace some 445,000 GJ of natural gas per year.

Biofact: As at September 2008, the United States had 162 corn-based ethanol distilleries in operation with an additional 41 plants under construction and approximately five to 10 that are undergoing expansions. With the number of current operating plants, the US is on track to reach the 15 billion gallon cap on corn-based ethanol mandated by the Renewable Fuels Standard (RFS).

Survey report: A 19 page survey report on *Barriers and Solutions for the Deployment of Biofuels in Europe* from the Biofuels Cities European Partnership reveal that the two most important barriers hindering larger-scale deployment of biofuels in Europe are the limited availability of vehicles with producer warranties that are able to run on biofuels and fossil fuel standards limiting the use of biofuel blends.
http://www.biofuelcities.eu/fileadmin/template/projects/biofuels/files/Publications/Barriers_and_solutions_report.PDF.

Video on algae as a biofuel: The following website has a number of videos on the development of algae as a biofuel: http://peswiki.com/index.php/Videos:Algae_as_Fuel

Rise of biogas in Germany: A document by the IEA that describes the rapid rise of Biogas in Germany and also details the incentives is at <http://www.iea.org/G8/CHP/profiles/germany.pdf>.

CERPA - Centre for Energy Research and Policy Analysis: CERPA is a multi-faculty institute focused on innovation and understanding in all aspects of energy generation, utilisation and conservation. For more information see www.cerpa.unsw.edu.au.

Dairyland signs PPA for biomass plant: Dairyland Power Cooperative has executed a power purchase agreement (PPA) with a subsidiary of DTE Energy Services, Inc., to purchase the full 40 MW of expected electrical output of a proposed new biomass power plant located in Cassville, Wisconsin. [DTE Energy Services](#) will own and operate the facility. The proposed plant is scheduled to come online 1 June 2010.

The European Biogasmax project: The project creates a network of biogas-related demonstrations on the European territory with the aim of sharing experiences in terms of best practices in managing urban

transportation. Projects carried out are closely tied to the following four main fields of technological activities: Production of biogas from various types of waste; upgrading of biogas to a high-quality fuel; distribution for transport and injection into natural gas grids; use in vehicles to increase the number of biomethane-fueled vehicles.

<http://www.biogasmax.co.uk/biogasmax-project-biogas-and-biofuel/biogas-and-biofuel-for-sustainable-development.html>

Britain approves 65 MW biomass power plant: The British government has approved Helius Energy Plc's plan to build an energy crop and wood-burning power station in Lincolnshire. The 65 MW plant near Stallingborough is expected to produce enough renewable electricity to power about 100,000 homes by burning waste wood and crops grown for energy use.

http://uk.reuters.com/article/UK_SMALLCAPSRPT/idUKL1615698720080616

Biomass heating and cooling: A movie on biomass heating and cooling, funded by the European Commission under its Sixth Framework Program and coordinated by BTG in the Netherlands is at <http://www.bioenergy-in-motion.com>.

BBI releases algae technical report: Colorado-based BBI International Inc., a diversified renewable energy firm, has released a 22-page technical report that details the challenges associated with growing and harvesting algae for biofuel applications. The US\$495 report is available through BBI's online store. To purchase a copy, visit <http://store.bbiinternational.com>.

Biomass, 'hot issue' report: A new report entitled *Biomass, Hot Issue* concludes that there is no reason to ban bioenergy, but there is also no reason to blindly embrace the concept without understanding the consequences. The report has been published by the Green Raw Materials Platform

<http://www.mvo.nl/biobrandstoffen/download/Smart%20choices%20in%20difficult%20times%20%20biomass%20Netherlands.pdf>

Vegiecars: Australian enterprise, Vegiecars advocates converting diesel vehicles to run on used vegetable oils. They offer a DIY Conversion Booklet, "How to operate your diesel vehicle on Straight Waste Vegetable Oil" plus various conversion kits and products to allow such conversion. See:

<http://www.vegiecars.com/home/>

Chemical Engineering News: A debate between Prof Dale and Prof Pimmental in on the Costs of Biofuel is at: <http://pubs.acs.org/cen/coverstory/85/8551cover.html>.

Chemical and Engineering News: "Ins and Outs: Comparing energy inputs to produce fuel for internal combustion engines" is at: <http://www.cendigital.org/cendigital/20071217/?pg=15>

New biopower plant in operation at Lestijärvi, Finland: A new type of CHP biopower plant at Lestijärvi, Finland has opened. The plant has been built by Lestijärvi Wood chip Cooperative. The plant's technology is based on patented Entimos-technology. The fuel for the Lestijärvi power plant comes from local forests. Some excellent pictures of the gasifier are at <http://www.entimos.fi/kuvia.htm>. Also see: <http://www.entimos.fi/news.htm>

Neste Oil to build a biodiesel plant in Rotterdam: Neste Oil is to build an 800,000 t/a plant to produce renewable diesel in Rotterdam in the Netherlands. The facility is scheduled to be completed in 2011. Total cost of the investment is projected to be EUR 670 million. Neste Oil is cooperating with over 20 universities and research institutions globally as part of this program, which is divided into six areas, including non-food vegetable oil, wood-based materials, and algae. The plant will employ around 100 permanent employees when completed. More information: <http://www.nesteoil.com>

EU Bioenergy Network of Excellence: The EU Bioenergy Network of Excellence publications and newsletters are at: http://www.bioenergy noe.org/?_id=179

UK - energy from waste a guide to opportunities in Britain: UK Trade and Investment, a UK Government department, has published a briefing explaining that the UK is fast developing its reputation, not only for global leadership on climate change, but also as one of the largest global hubs for the

development of low carbon technology. It has recently published a guide on energy from waste, highlighting investment opportunities, but also containing interesting summary data. <http://www.ukinvest.gov.uk/UKTI-publications/4024575/en-GB.html>. The guide is available for download from the Department's website at: <http://www.ukinvest.gov.uk/UKTI-publications/4024575/en-GB.pdf>

Biomass as emergency electricity source: An interesting web article on reducing forest biomass fuel loading for fire hazard reduction discusses the chunking of small tree limbs in a self build small scale chunker and using this biomass for an emergency electricity source in a home made downdraft biomass gasifier. The article is liberally illustrated with photos and diagrams. See http://www.clean-air.org/Ed%20Burton%20Story/wood_chips_to_bio.htm.

A Biogas as Vehicle Fuel: A report *Biogas as Vehicle Fuel*, from 2003 is downloadable as a pdf file from: <http://213.131.156.10/xpo/bilagor/20040115134708.pdf>

IEA Bioenergy Task 37: IEA Bioenergy Task 37 on landfill and biogas has produced a brochure on the use of biogas for running a train in Sweden. See: http://www.iea-biogas.net/Dokumente/casestudies/linkoping_final.pdf

Opportunities Corner

The Bioenergy Australia manager would like to assist and facilitate biomass and bioenergy projects and businesses by providing information and industry contacts to link project developers, resources and energy companies, source of finance and other opportunities. If you or your organisation is interested in such assistance, please contact Steve Schuck for a free listing. Please note notices are placed using supplied information, without checking its veracity. Interested parties should make their own enquiries to verify the information below

- **Bioenergy Project on Kangaroo Island:** Dennis Hilder, Manager Forest Operations at the Timber Creek Pine Sawmill Pty Ltd in South Australia, is seeking to enter into a partnership arrangement to use presently under-utilised supply of wood biomass from their sawmill and forest harvesting operations on Kangaroo Island. He reports they have 20,000 tonnes of green sawmill waste chipwood, bark and sawdust plus another 1,000 – 1,500 tonnes of post peeler waste per annum. Subject to cost feasibility, there is potential to supplement this with pulpwood by-product from their forest harvesting operation. Possibilities identified are a biomass fuelled power plant or a wood pelletising plant. Dennis may be contacted at: Tel: 08 8559 5238; Fax 08 8559 5239; mobile: 0427 787 718.
- **Gasification System Tender for Namibia:** Tenders are being invited from competent, experienced contractors for the supply, delivery, installation and commissioning of a biomass gasifier system and support ancillaries, internal combustion engine(s) and generator set(s) and supervisory, control and automation systems, in one lot, for the generation of at least 200kW to 300kW electrical power using wood of a variety of Namibian invader bush species by CBEND (Combating Bush Encroachment for Namibia's Development) Project Steering Committee. The contractor will also be responsible for operational skills-transfer and at least one year, full after-sales service and maintenance under a warranty agreement. The tender document, available at no cost, is downloadable from URL: <http://www.drfn.org.na/cbend>. The tender closes 15 January 2009 at 12:00 Namibian time (GMT+2:00). There is no requirement for site inspections or pre-tender meetings.
- **Graduate Position Sought:** A German student, about to graduate in renewable energy technology is seeking a graduate position for a period of time in Australia. If interested in providing such a position, please contact Mr Florian Mix by email at: mixerdelux@gmx.de
- **Biower Seeks Project Opportunities in Australia:** Finnish company, Biower, a supplier of total solutions for wastewater treatment and bioenergy production, is seeking project opportunities and partnerships in Australia. Biower's services can extend to project management, the systems' life

cycle services, and the operation of entire plants if required. Bower indicate that their solutions comply with the Best Available Technology (BAT) and the Best Environmental Practice (BEP) requirements. Bower has rights to market and sell Clewer, Wisser and Kompogas technologies. Please direct inquiries to Mr. Pekka Eskelinen, email: pekka@akelaband.com.

- **Part-time Work Sought:** Jensen Chan, is a third year Chemical Engineering student at University of Queensland. He is seeking part-time work in the renewable energy industry. He is available for three months and would like to spend that time in gaining experience in this field. He is interested in all aspects of this industry, including the commercial, strategic planning as well as the economic potential side of renewable energy. Tel: 0430 211 434, Email: jensen.jc.chan@gmail.com.
- **Power Plant:** International Power has, since 1918 been buying and selling both 50 and 60 Hertz - new and used pre-owned electrical, gas, steam, and power plant equipment including gas turbine generator units, steam turbine generator units, boilers, transformers, diesel and gas engine generator units, hydroelectric generator units, etc. See their website at <http://www.intlpower.com> for additional information about their company.
- **Agave Biomass:** Don Chambers has been working on an Agave project. Agave is a type of desert plant from Mexico also used to make tequila. He has progressed to the point of having sufficient material in the nursery to plant out. The next step is to find land to make the plantings and get a management team / partners together to go forward. He is interested in hearing from anyone who could be interested in this project. Contact details are:
Don Chambers
PO Box 32, Aldgate, SA 5154
Tel : 08 8370 1000, Mobile 0412 214 235
ausagave@bigpond.com
- **French Student Seeks Placement:** A French engineering student with an interest in energy, thermal mechanics and fluid mechanics, would like to do a training course for 6-month in an Australian company from February to August, 2009. For supplementary information please contact marjorie_michel@hotmail.fr.
- **New, Innovative Hogger on Australian Market:** Progressive Equipment of New Zealand reports to have developed a new, highly innovative hogger for the Australasian market. It has a number of very innovative features including a 38m² pre and post screening drum, dynamic closed loop processing (eliminating oversized product) and highly efficient vertical rotor. As a result the WoodWeta creates new industry standards in improved fuel efficiency, improved reliability, reduced operating costs and superior biomass quality. If you would like more information please contact Carl Wills on carl@proquip.co.nz.
- **Chinese Wood Pellet Technology:** Century Technology Co., Ltd is a Chinese company that has specialised in the design and manufacture of equipment and complete plants for manufacturing wood pellets. They specialise in producing all kinds of renewable energy machinery and accessories such as pellet presses, hammer mills, wood chippers, log splitter, mixers, drying machines, coolers, etc. They are very interested in establishing long term business relationships with people and companies in Australia. Contact: Tina, 337 Room, Science and Development Park of QuanShan District, XuZhou, JiangSu, China. Tel: 0086-516-83891569; Fax: 0086-516-83891050; Mobile: 0086-13813455420 ; Email: info@centurytechnology.cn; Centurytechnology2008@gmail.com. Web: <http://www.centurytechnology.cn>.
- **Gloucester Project:** A group of informed residents based in the Gloucester area of NSW has set up The Gloucester Project to research and develop a range of climate mitigation projects. They seek the support and co-operation of government, non-government agencies, research institutes and the private sector in furthering research and developing economic and social adaptations to the challenges of: climate changes, fuel and energy costs and supply, sustainable natural resource management, waste management, food production and distribution, sustainable tourism and the sustainable use of community resources. The Gloucester project is seeking support via the Bioenergy Australia newsletter. Their web page is <http://www.thegloucesterproject.org.au>. Email: mistryridge@gobushmail.com.au. Tel: (02) 6558 3191.

Self-Managed Subscription to Bioenergy Australia Newsletters

An email distribution list has been set up, to allow readers of this newsletter to self-subscribe (and unsubscribe) to the Bioenergy Australia Newsletters and to receive our conference notices. To self-subscribe, go to: <http://groups.google.com/group/bioenergyaustralia/subscribe>

Joining this list is purely to facilitate management of the distribution of Bioenergy Australia newsletters and the annual conference notices. It will only be used for this purpose and you will not receive other emails through this list. It is intended that over time, this will be the primary way of distributing the Bioenergy Australia newsletters and conference notices. Self-subscribing will require you to take on a list password. It would be much appreciated if you would join this group, as in the not too distant future this will be the only way newsletter notices will be disseminated. If you have any queries, please contact Steve Schuck.

Back Issues of Bioenergy Australia Newsletters – Downloadable from the Bioenergy Australia homepage:
<http://www.bioenergyaustralia.org>

The Bioenergy Australia Newsletter is a complimentary service provided by Bioenergy Australia to stimulate interest and involvement in biomass and bioenergy in Australia. Email is the preferred way of distributing these newsletters. If you do not wish to receive future newsletters, please advise Steve Schuck.

Bioenergy Australia Newsletter is interested in your organisation's bioenergy related activities. Please send all press releases, article leads and conference announcements to Steve Schuck. Fax: (02) 9416 9246
Email: sschuck@bigpond.net.au.

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Editor: Dr. Stephen Schuck, Bioenergy Australia Manager

Any comments, suggestions, articles and feedback are welcome. The views expressed in this newsletter are not necessarily those of the member organisations. Bioenergy Australia may be contacted at:

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