



Newsletter

October 2000

Biomass Taskforce Renamed to Bioenergy Australia

Since the last newsletter was sent out, the Australian Biomass Taskforce has had its name changed to Bioenergy Australia. This decision was one of the recommendations from an independent review of its operation. Interest in biomass energy and bio-based products has grown tremendously in Australia since the Biomass Taskforce was established in July 1997 for an initial three year period by four Federal Government organisations. Towards the end of the initial three years of operation, RIRDC, Bioenergy Australia's lead organisation commissioned the Centre for International Economics to conduct a comprehensive review of the Biomass Taskforce with a view to its continuation. Besides recommending that the Biomass Taskforce continues for at least a further three years, the CIE recommended a change of name. The membership subsequently decided on the new name of Bioenergy Australia. The new name came into effect in July 2000.

Bioenergy Australia Membership¹ Update

The Bioenergy Australia membership continues to grow. Thirty-eight organisations are now participants in Bioenergy Australia, with recent new members being Conservation and Land Management (CALM) of Western Australia, Auspine Ltd, North Forest Products, and the CSIRO Sustainable Ecosystems. 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: Steve.Schuck@bigpond.com if your organisation is interested in joining this bioenergy development forum.

Bioenergy Australia 2000 Conference 4-6 December, Gold Coast, Queensland

Bioenergy Australia will be holding its inaugural conference at the Grand Mercure Hotel, Broadbeach, Gold Coast on 4-5 December with a field trip to visit three bioenergy projects on Wednesday 6 December. The program on Monday 4 December will consist of papers setting the framework, including policies and programs for bioenergy development in Australia. A series of Case Studies will follow in two parallel sessions after lunch. Specific case studies will relate to electricity and co-products from mallee eucalypts, bioenergy projects with the sugar industry, gasification of green and municipal solid waste, ethanol-from-wood, a large scale anaerobic digester being constructed in Sydney's western suburbs,

¹ Founding members: RIRDC and the Australian Greenhouse Office. Membership now also includes DISR, BRS, CSIRO Div of Energy Technology & Div of Forestry and Forest Products, FPA of NSW, Pacific Power, Delta Electricity, Macquarie Generation, Waste Service NSW, Brightstar Environmental & BEST, SEDA, SPM/CPM, Forestry Tasmania, State Forests of NSW, Western Power Corporation, Alstom Power, Western Sydney Waste Board, Stanwell Corporation, CS Energy, NRE - Forest's Service, the Northern Sydney Waste Board, AFFA, Tarong Energy, Great Southern Energy, Energy Equipment International Pty Ltd, Rio Tinto R&TD, QFRI, Babcock and Brown, CVC REEF, ForestrySA, Renewable Energy Corp Ltd, CALM, Auspine Ltd, North Forest Products, and CSIRO Sustainable Ecosystems.

biomass co-firing and Visy's Tumut cogeneration power plant. The Tuesday 5 December program will mainly consist of a series of moderated panel discussions on the topics of 'Biofuels Availability', 'Technology Availability', 'Environmental, Social and Institutional Issues', 'The Market for Bioenergy', and 'Investment in Bioenergy'. A supporting presentation to the 'Market for Bioenergy' discussion will be provided on The Green Electricity Market Project by Ken Chapman of M-Co. Professor Ralph Sims of Massey University, New Zealand will act as Rapporteur for these panel discussions. On Wednesday 6 December an optional conference tour to Stanwell's project at the Rocky Point Sugar Mill, a visit to the Luggage Point biogas plant and to Visy's fluidised bed combustor on Gibson Island are planned. There will also be an exhibition at the conference. **A registration form for the conference is provided at the end of this newsletter.** The early bird registration closes on 31 October. To encourage agroforesters, farmers and students to attend a substantial discount is being offered.

The full program for the conference may be found on ICMS' web site at www.icms.com.au/bioenergyaust2000. Sponsorship and exhibitor information packs are also available. Contact Natalie Daines at ICMS' Sydney office on phone: 02 9290 3366 fax: 02 9290 2444 email: natalie@icms.com.au.

IEA Bioenergy Participation by Australia

Bioenergy Australia is the vehicle for Australia's participation in the International Energy Agency's (IEA) Bioenergy program. Bioenergy Australia is providing Australia's annual membership fee to the IEA Bioenergy Executive Committee, with the Bioenergy Australia Manager convening a group which has been participating in IEA Bioenergy Task 17, *Short Rotation Crops for Bioenergy* since the beginning of 1999. Since January 2000 the Bioenergy Australia has been directly participating in four additional Tasks. These new Tasks are:

- Task 18-*Conventional Forestry Systems for Bioenergy*
- Task 19-*Biomass Combustion*
- Task 23-*Energy from Thermal Conversion of MSW and RDF*
- Task 25-*Greenhouse Gas Balances of Bioenergy Systems*

Subgroups from Bioenergy Australia membership have formed to participate in these Tasks, with each Task selecting a National Team Leader to co-ordinate involvement. National Team Leaders are: Task 18- Dr John Raison, CSIRO Forestry and Forest Products; Task 19- Peter Coombes, Delta Electricity; Task 23- Paul Wootton, Brightstar Environmental; and Task 25- Dr Annette Cowie, State Forests NSW.

Bioenergy Australia will be participating in successor Tasks from 2001-2003. There is also a possibility of joining the *Liquid Fuels* Task should sufficient industry support be forthcoming. This is also being investigated by a Renewable Energy Action Agenda implementation group considering renewable transportation fuels.

Should you or your organisation wish to obtain information on IEA Bioenergy and possible participation in this program, please contact Steve Schuck, the Bioenergy Australia Manager and Australia's representative on the Executive Committee of IEA Bioenergy. Tel/fax: (02)-9416-9246, or email: Steve.Schuck@bigpond.com. IEA Bioenergy has its home page at the new URL: <http://www.ieabioenergy.com> which provides links to the IEA Bioenergy Task sites and information such as its Annual Report and the Strategic Plan.

Australia Hosts IEA Bioenergy Meetings

Task 18 *Conventional Forestry Systems for Bioenergy* held its annual workshop "Bioenergy from Sustainable Forestry: Principles and Practice" in south east Queensland and northern NSW from 16 to 20 October 2000. The technical sessions were held at Coffs Harbour from Wednesday 18 to Friday 20 October. Task 18 is developing systems and guidelines for environmentally sustainable and economic production of biomass for energy from conventional forestry systems; and to promote their acceptance and use in relation to silviculture, forest management, harvesting and transportation. The meeting was hosted by Bioenergy Australia and State Forests of NSW. Session topics were: Forest Management; Production of Forest Fuels; Fuel Quality; Biodiversity; Environmental Indicators & Sustainability Management; Carbon Sequestration & Balances; Management Planning & Decision Tools; and Bioenergy Systems Analysis. Approximately 40 delegates, mainly from overseas attended this workshop.

Task 19 *Biomass Combustion* will be holding its meeting at the Grand Mercure Hotel, Broadbeach on 7 & 8 December, immediately after the Bioenergy Australia 2000 conference, and will share its technical tour. For details contact Peter Coombes of Delta Electricity on tel: 02 9285 2789.

The new Task *Greenhouse Gas Balances of Biomass and Bioenergy Systems* is also planning to hold its next meeting in Australia in late March 2001. In March this year a Task 17 meeting was held in Western Australia.

9,500 GWh Additional Renewable Energy Legislation Imminent

The Bill that will mandate that Australian electricity producers provide an additional two percent renewable energy by 2010 has been passing through Federal Parliament. In the announcement following Cabinet's decision to proceed with the measure, the target was set at 9,500 GWh/a from 2010 until 2020, to be phased in from 2001. The measure will apply to wholesale purchasers of electricity on grids larger than 100 MW capacity, with self-generators being excluded as liable parties. The measure will operate through the trading of renewable energy certificates. Biomass energy is expected to provide a substantial proportion of the renewable energy to meet the target. Issues to be resolved by Parliament include eligible biomass fuel sources, the tax deductibility of the mooted \$40/MWh 'charge' and its indexation. Information on the 9,500 GWh/a target may be found on the Australian Greenhouse Office's website at: www.greenhouse.gov.au/markets.2percent_ren/fs_boost.html

Renewable Energy Commercialisation Program Round 4 Grants

The Australian Greenhouse Office has made known the fourth round of the Renewable Energy Commercialisation Program grant offers. Bioenergy projects announced are:

- **Advanced bagasse fired boiler/heat recovery steam generators for large scale electricity cogeneration in sugar mills**

A grant of \$1,000,000 has been offered to the **Sugar Research Institute**, Mackay, Queensland for the installation of a new design of boiler for firing bagasse from sugar production to commercially generate renewable energy. Design innovations address efficiency and cost issues and involve convection tube bank configurations for reduced wear; air heater design for increased performance and reduced corrosion; improved secondary air

injection and improved fuel spreader design. The new enhanced boiler, incorporating heat recovery steam generators to further improve its efficiency, will be installed for the first time together in a single sugar plant at Maryborough Sugar Mill. The Queensland Department of State Development has offered funding of \$1.8m to other elements of the project, resulting in advanced technologies design and engineering, modifications and process optimisation, commissioning and performance testing of the sugar mill boiler.

- **The NSW Sugar Milling Co-Operative Ltd (Condong)** has been offered \$1,000,000 for two related projects:

Factory Based Cane Trash Separation System

The development of a trash/cane separation plant for Condong Sugar Mill by utilising cane trash fuel in cogeneration with existing waste stream products (including camphor laurel) and integrating with the advanced cane harvester technology developed by NSW Sugar. The cane trash would otherwise be burnt or left to decompose in the field without being used as an energy source.

This project will be the culmination of extended R&D by the Sugar Research Institute (SRI) into trash separation for cogeneration purposes. It will be the companion to a Queensland project planned by SRI and Stanwell Corporation which will study treatment of trash for improving its performance as a boiler fuel.

Innovation in harvesting, processing and transporting the woody weed camphor laurel for renewable energy production and other products

The second project is with State Forests of NSW and Delta Electricity for the supply of forest residues from the woody weed, Camphor Laurel (a pest species), to the Condong sugar mill, NSW for year round commercial power generation. The project introduces an innovative concept for harvesting and transport, reducing the delivered cost of fuel by utilising a tracked chipper and idle cane harvest equipment to harvest and deliver product. The recovery of biomass will be maximised by harvesting close to stump. The 10 year project will be located in northern NSW, commencing in the autumn of 2001.

SEDA Announces ‘Renewables Investment Program’ Projects

The New South Wales Sustainable Energy Development Authority, SEDA has announced \$4.3 million funding for nine renewable energy projects under the third round of their Renewables Investment Program. Four bioenergy projects are to be supported. They are:

- **EarthPower Technologies:** A \$17.7 million anaerobic digester at Camellia in Sydney’s west, which will convert food and food processing wastes into biogas and organic fertiliser. Stage 1 will process 82,000 tonnes per year, with plans to expand to 140,000 tonnes per year. Feasibility of generating electricity from the biogas will be considered in Stage 2. Completion is expected in June 2001 and will produce 3 MW of exportable biogas (65% methane, 35% carbon dioxide). The prime contractor will be McConnell-Dowell, with the AD technology to be supplied by Waste Solutions from New Zealand and BTA of Germany.
- **AGL Landfill Gas Projects:** Landfill gas extraction and electricity generation at West Nowra and Wagga Wagga. The former project is due for completion in February 2002 and will produce approximately 1MW, with the Wagga Wagga project to probably produce 626 kW.
- **Rethmann Australia:** Installation of a plant to process waste otherwise destined for landfill, to produce 25,000 tonnes of fuel pellets that can be used in power stations instead of coal. When fully operational, the plant will supply 14,000 tonnes per annum of high quality fuel pellets with an energy potential of 322 million MJ per annum.

- Sydney Water: Installation of a 470 kW cogeneration plant at the Cronulla Sewage Treatment Plant in Sydney's south-east. To date digester gases have been flared for disposal. The plant will operate for 16 hours per day, 355 days per year.
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Emissions Trading Postponed

The Minister for Industry, Science and Resources, Senator Nick Minchin announced on 23rd August that the Commonwealth Government, whilst committed to the pursuit of cost effective greenhouse abatement policies, will only implement a mandatory domestic emissions trading scheme if the Kyoto Protocol is ratified and there is an established international emissions trading regime. Emissions trading will continue to be kept under review and could be introduced at a later point if in the national interest. See <http://www.minister.industry.gov.au/minchin/releases/2000/august/cmr431%2D00.doc>

Forest and Wood Products Action Agenda Launched

On 4 September Federal Cabinet approved the Forest and Wood Products Action Agenda and an increase in R&D funding to dollar-for-dollar with industry. A major focus of the strategy is to wind back the \$2 billion trade deficit in forest products, helping the Australian forest and wood products industry to become more globally competitive and increasing Australia's presence in the growing Asian market. A Forest Products Advisory Council will oversee the Action Agenda which is supportive of Bioenergy Australia and participation in IEA Bioenergy. Details of the Action Agenda are on AFFA's forest website at <http://www.affa.gov.au/affa/subjects/forestry.html#5>. The Media release on the R&D funding is at <http://www.affa.gov.au/affa/pr/releases/tuckey/index.html>.

Further details may be obtained from Clive Catton of AFFA. Tel: 02 6272 4191.

Victoria Develops Greenhouse Strategy

Victoria has released a discussion paper for their Greenhouse Strategy for comment. A series of public forums are being held in regional and metropolitan Victoria to encourage comment on the Discussion Paper and the Victorian Greenhouse Strategy. The closing date for submissions is Friday, 17 November 2000. To get the paper or to comment visit: <http://www.greenhouse.vic.gov.au/>

FPA of NSW Announces Studies for Wood Waste Fired Power Stations

The New South Wales Forest Products Association has announced it has teamed up with Babcock and Brown and National Power (USA) to conduct studies for three 30 MW scale wood waste fired power stations in NSW. The investigations are for sites near Grafton, Buladelah and Moruya. The FPA has formed the Clean Green Energy Company as the vehicle for this development.

Renewable Energy Corporation Ltd Announces Waste-to-Energy Projects

Bioenergy Australia member, Renewable Energy Corporation Ltd announced in August the supply of a Waterwide gasification unit to a US \$7 million poultry litter-to-energy-to-fertiliser plant in Virginia, USA, being developed in conjunction with DukeSolutions and Harmony

Products. That plant is currently under construction and will be the first large-scale application in the USA of a closed loop system to solve the problem of animal waste disposal.

The Virginia project has now led to a joint development agreement to apply the same technology in at least four other locations, at a total construction cost of US\$36 million, with plants scheduled for completion in late 2001. These plants will be based on gasification of poultry waste to produce organic fertiliser and energy for sale to industrial customers in the form of steam. RECL will share ownership of these plants with DukeSolutions and Harmony Products and it is planned to extend the technology to include processing of industrial waste water sludge and other animal waste streams in similar plants at other locations. The project partners estimate deployment of up to 200 plants worldwide, with about half these in the USA. See web: www.renrg.com ; www.dukesolutions.com ; www.harmonyproducts.com .

EnviroStar Energy Commences Construction of Green Waste to Energy Plant

Another Bioenergy Australia member, EnviroStar Energy has commenced construction of its Stapylton, Gold Coast, Queensland 21 MW green waste to energy facility. Earth works commenced on 25 July, with boiler house construction set to commence in December with full load operation due in September 2001. The facility will be fuelled by household green waste sourced from seven council landfills within South-East Queensland. The plant will use proprietary fluidised bed technology and will use air-cooled condensers to minimise use of water. Inert ash from the plant will be used for the manufacture of lightweight concrete blocks. Further information: www.envirostar.com.au Tel: 02 9929 3962.

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 addresses given in the previous nine issues of the Bioenergy Australia newsletters. These lists are consolidated as electronic links on Bioenergy Australia's web page at www.users.bigpond.com/Steve.Schuck/ABT

Senate Committee report on 2%

http://www.aph.gov.au/senate/committee/erca_ctte/REB2000/Reb2000.pdf

ABC Earthbeat story – Burning Forests for Electricity Tasmania's Huon Valley

www.abc.net.au/rn/science/earth/stories/s2700741.htm

Bioenergy Atlas web site (RIRDC/AGO funded project)

http://sg211.gisca.adelaide.edu.au/bioenergy_atlas/html.atlas_index.html

Northern Sydney Waste Board

www.northwaste.nsw.gov.au

Australian Waste Database

<http://www.civeng.unsw.edu.au/Water/awdb>

GGAP Guidelines

http://www.greenhouse.gov.au/ggap/guidelines_related.html

Anaerobic Digestion sites

<http://www.anaerobicdigestion.com>

http://www.pipeline.com/~dan_glick/CFR.html

<http://www.husdyr.kvl.dk/hm/php/tune96/13An.htm>

Bioscan A/S (anaerobic digestion)

<http://www.bioscan.dk/>

Researchers solve toxic wood-waste problem story

http://enn.com/news/enn-stories/2000/10/10092000/treatedwood_32228.asp

The Florida Center for Solid and Hazardous Waste Management (treated wood research)

<http://www.floridacenter.org/>

University of Florida has developed a technique to reduce toxic pollution from burning pesticide-treated wood
<http://www.ufl.edu/>

Florida Center for Solid and Hazardous Waste Management (CCA treated wood)
<http://www.ccaresearch.org/>

Biotechnology Chemical Centre, Lund University, Sweden
<http://www.biotek.lu.se/>

Energy as an instrument for Socio-Economic Development (UNDP)
<http://www.undp.org/seed/energy/policy/>

Carbohydrate Economy Clearinghouse
<http://www.carbohydrateconomy.org/>

Pew Center on Global Climate
<http://www.pewclimate.org/>

Victorian Government's greenhouse discussion paper.
<http://www.greenhouse.vic.gov.au>

Gasifiers (50-300 kW scale)
<http://www.marick.co.uk>

UNDP
http://www.undp.org/seed/energy/policy/ch_5.htm

BioEntrepreneur 2000 Workshop
www.bioentrepreneur.net

Reith Lectures in UK: Can Sustainable Development be made to work in the real world?
http://news.bbc.co.uk/hi/english/static/events/reith_2000/

"Cli-Manage 2000"
<http://www.bom.gov.au/climate/cli2000/cli2000.html>

XII World Forestry Congress (FAO)
<http://www.wfc2003.org/>

Bioenergy Glossary (US Oregon Department of Energy)
http://trredc.nrel.gov/biomass/states/bio_glossary/

Life Cycle analyses (biomass systems)
http://www.eren.doe.gov/biopower/bplib/Library/Life_cycle_all.pdf

Greenfield Resource Options Pty Ltd
<http://www.gro.com.au/>

The Climate Change Newsletter, Volume 12, Number 2
<http://www.brs.gov.au/publications/ccn/ccn12v2/index.html>

Gasifiers
<http://www.gasifiers.org>

Health Benefits of Biodiesel
<http://ens.lycos.com/e-wire/June00/23June0001.html>

National Biodiesel announcement on biodiesel development
http://www.biodiesel.org/bio_bulletins/62000bdbulletin.htm

AFBnet international seminar on biomass cofiring
<http://www.itebe.org>

Green Electricity Marketplace
<http://www.gemoz.com>

'Woody Biomass as an energy source -challenges in Europe' conference, 25-28th September, Joensuu, Finland
<http://www.efi.fi/events/2000/woody.html>

11th issue of our BUN-INDIA news letter
http://144.16.65.129/~cgplhome/bun_vol_33.html

Ninth Regional Biennial Bioenergy Conference (Buffalo, NY, USA)
<http://www.nrbp.org/bio2000.htm>

Wood roasting unit- (torrified wood)
<http://www.techtp.com/EC%20TW%20demo.htm>

ENAMORA gasifier
<http://www.energiaverde.com>

TEKES Technology Development Centre, Finland
<http://www.tekes.fi>

Economist articles of distributed power (5-11 Aug)
http://www.economist.com/editorial/freeforall/current/index_st1632.html

Glossary of bioenergy terms - Oregon Office of Energy
http://rredc.nrel.gov/biomass/states/bio_glossary/

4th Session of the Internet Conference on Material Flow Analysis
"Anaerobic Digestion of Organic Wastes - Process Parameters and Balances in Practice"
presented by Martin Kranert and Kai Hillebrecht (Germany). Internet conference paper:
<http://www.ias.unu.edu/proceedings/icibs/ic-mfa/hillebrecht>

32 MW biomass-fuelled, integrated, combined-cycle power station based on eucalyptus wood
http://www.caddet.co.uk/html/body_398newss.htm
<http://www.caddet.co.uk/html/contswed.htm>
<http://www.caddet.co.uk/html/398news.htm>

Ethanol from Wood
http://www.daviesand.com/Perspectives/Forest_Products/Ethanol/.

Los Alamos National Laboratory (gasification/fuel cells)
<http://www.lanl.gov/energy/ziock/ziock.html>

US Native Forest sustainability issues sites
<http://www.calbiomass.org/forestry.htm>
<http://ermisweb.state.mi.us/biomass/publications/breakfast/#Forestry>
http://rredc.nrel.gov/biomass/doe/rbep/ms_biomass/e.html
http://rredc.nrel.gov/biomass/doe/rbep/ms_biomass/future.html

Victorian Government Releases Greenhouse Strategy Discussion Paper
<http://www.greenhouse.vic.gov.au/>

Forest and Wood Products Action Agenda
<http://www.affa.gov.au/affa/subjects/forestry.html#5>

The Media release on R&D funding for the Forest and Wood Products Action Agenda
<http://www.affa.gov.au/affa/pr/releases/tuckey/index.html>

Information on biomass residues
http://www.rwedp.org/p_residues.html

Louisiana-Pacific (adhesives from bark)
<http://www.LPCorp.com>

Ensyn Group Inc. (biobased fuels and bio-based chemicals)
<http://www.ensyn.com>

Biomass compactor (makes small burnable smoke free logs from Sawdust)
<http://www.shimada.co.uk/>

ENDS Report 305, pp. 23-25, June 2000 (BASF gasifier)
<http://www.ends.co.uk/report/index.htm>

"The Environmental Imperative for Renewable Energy: An Update," Dr. Adam Serchuk,
April 2000
<http://www.repp.org/articles/envImp/>

CTI's World ClimateTech2000
<http://www.climatetech.net/climatetech/index.html>

Workshop on Integrated Food Production and Resource Management (9-10 Nov), Brisbane
<http://inform2000.laf.uq.edu.au>

Integrated Tree Cropping Ltd
www.treecrop.com.au

The Saltland Pastures Association - Proposal For Revegetation of One Million Hectares of
Wheatbelt Saltland in Western Australia
<http://www.general.uwa.edu.au/u/dpannell/saltland.htm>

The Association for the Advancement of Industrial Crops 2000 Annual Meeting, St. Louis,
Missouri- October 15-17, 2000.
<http://www.aaic.org/meetings.htm>

Biofacts

To obtain a balanced view of various renewable energy technologies, it is most important to consider not only their emissions during operation, but also from all stages of their life cycles from manufacture, construction, deployment, operation and eventual decommissioning. For sustainably managed bioenergy systems, a simplistic view is that carbon dioxide released during operation (e.g. from combustion and gasification processes) is reabsorbed by photosynthesis during the balanced growth of the biomass. Detailed analyses have been conducted to assess full life cycle emissions of such plants, including fossil fuels used for production, harvesting and transportation of biofuels. Likewise, photovoltaic cells and wind energy, while they do not emit carbon dioxide during operation, they do have emission associated with their manufacture. The Table below gives life cycle carbon dioxide emissions for a range of bioenergy and other renewable energy sources and is compared to 'best practice coal' and gas combined cycle gas turbines.

Life Cycle Carbon Dioxide Emissions for various technologies (g/kWh)

Coal: Best Practice	955
Gas: Combined cycle	446
Onshore wind	9
Hydro - existing large	32
Hydro – small-scale	5
Decentralised PV- retrofit	160
Decentralised PV – new houses	178
Decentralised PV – new commercial	154
Bioenergy – poultry litter - gasification	8
Bioenergy – poultry litter – steam cycle	10
Bioenergy – straw – steam cycle	13
Bioenergy –straw - pyrolysis	11
Bioenergy – energy crops - gasification	14
Bioenergy – Forestry residues – steam cycle	29
Bioenergy – Forestry residues - gasification	24
Bioenergy – animal slurry – anaerobic digestion	31
MSW incineration	364
Landfill gas	49
Sewage gas	4

(Source *New and Renewable Energy: Prospects in the UK for the 21st Century, Supporting Analysis*. Dept of Trade and Industry, March 1999).

Swedish Technology Selected for BIG-GT project in Brazil

A project to construct and operate a 32 MW biomass-fuelled, integrated, combined-cycle power station based on eucalyptus wood is in progress.

The combined-cycle power station integrates atmospheric pressure gasification technology and gas turbines, otherwise known as Biomass Integrated Gasification-Gas Turbine technology (BIG-GT). The plant will be located in Bahia, North-eastern Brazil and is scheduled to start up in later this year.

In the BIG-GT process, biomass (as chipped wood) is heated and transformed into an energy-rich gas. The gas is cleaned and burned in a gas turbine. Hot flue gas from the gas turbine is

led into a heat recovery boiler producing steam that is in turn led into a steam turbine. This 'combined-cycle' method of using a gas turbine in combination with a steam turbine is a key to the high electrical efficiency of the BIG-GT plant. The TPS gasification and gas-cleaning process has made it possible to produce a biogas clean enough to be used in a high-efficiency gas turbine. The TPS proprietary tar-cracking technology is also fundamental to the scheme, which must generate cool, clean gas for the compressor while avoiding the production of significant quantities of noxious wastes.

For more information go to web site: <http://www.caddet.co.uk/html/398news.htm>

Forthcoming Events

- *Bioenergy Australia 2000*, 4-6 December 2000, Grand Mercure Hotel, Broadbeach, Gold Coast, Qld. <http://www.icms.com.au/bioenergyaust2000>
Email: bioenergyaust@icms.com.au, Tel: 02 9290 3366, Fax: 02 9290 2444.
 - *Sustainable Energy Expo & Convention*, SEIA Ltd, Melbourne, 31 Oct and 1 November. Web: <http://www.seia.com.au/ISEEC.html>
 - *World Ethanol 2000 Conference*, Langham Hilton Hotel, London, 8-10 November 2000. Contact: conferences@fo-licht.com www.fo-licht.com Tel: 44(0) 1892 511 807.
 - Workshop on *Integrated Food Production and Resource Management*, 9-10 Nov, Brisbane. Web: <http://inform2000.laf.uq.edu.au>
 - Xcelerator Ltd will be hosting the first *BioEntrepreneur 2000* workshop and conference in Sydney on 8th and 9th November 2000. It is aimed at entrepreneurial individuals working in the life sciences who want to learn how to take an idea and turn it into a successful Biobusiness enterprise. Details of this meeting are available on the conference website: www.bioentrepreneur.net and www.xcelerator.com.au. There are special registration fees for students. Contact: Marty Cameron, Xcelerator Ltd. Tel: (02) 8877 9100. Email: mcameron@xcelerator.com.au
 - Sixth Conference Of The Parties To The Framework Convention On Climate Change: COP-6 will be held in The Hague, The Netherlands, from 13-24 November 2000. For more information contact: the FCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.de; Internet: <http://cop6.unfccc.int>
 - *From Fossils to Photons: Renewable Energy Transforming Business*, Solar 2000, 38th Annual Conference of the Australian and New Zealand Solar Energy Society, November 29 - 1 December 2000, Griffith University, Brisbane. <http://www.solar2000.aust.com>
Email: solar2000@icms.com.au
 - *Business Opportunities in Bagasse-based Cogeneration*, 1 Dec 2000. Hotel Taj Coromandel, Chennai, India. Email: winrock@vsnl.com Tel: 011 614 2965.
 - *Pacificchem*, the 2000 International Chemical Congress of Pacific Basin Societies, will take place in Honolulu, Hawaii December 14-19, 2000. The sponsors are the American Chemical Society, Canadian Society for Chemistry, The Chemical Society of Japan, The Royal Australian Chemical Institute and The New Zealand Institute for Chemistry. Within the Program, there are four symposia concerned with biomass utilisation:
 - Utilization of Biomass for Production of Chemicals in the 21st Century
 - Chemical Modification, Properties and usage of LigninBioconversion of Lignocellulosics to Ethanol and Coproducts
 - Lignocellulosics Science and Technology, from Laboratory to MarketContributions to these Symposia are now solicited. Further information is on the web at: <http://www.acs.org/meetings/pacific2000/>
 - *ISES 2001 Solar World Congress*, Nov/Dec 2001, Adelaide. Web: <http://www.unisa.edu.au/ises2001congress>
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Residues

- Bioenergy Australia has released its six page glossy brochure entitled *Biomass - Energy and Products* to inform a wider community about biomass and the opportunities it affords. The brochure provides a general introduction on biomass, and covers biomass conversion technologies and the benefits of biomass energy. The brochure was issued as an insert in the most recent edition of *Australian Energy News*.
- Steve Schuck, the Bioenergy Australia Manager delivered a paper at the AIC *Contracting in Plantation and Production Forestry* 3rd Annual Conference in Melbourne 4-5 September 2000. The title of the paper was "Bioenergy Opportunities from Forestry Residues".
- Steve Schuck gave a presentation at the Australia Institute of Energy half day symposium *Energy from 'Waste' Fuels* on 25 October. The presentation was entitled "Bioenergy Development in Australia".
- Stanwell Corporation Ltd has announced it will be developing two sewage gas bioenergy plants in Townsville at a cost of \$535,000. Each installation will provide 115 kW.
- A new report, "Agricultural Soil Carbon Accumulation in North America: Considerations for Climate Policy," is now available at the web site of the Natural Resources Defense Council: Full Report: <http://www.nrdc.org/globalWarming/depth.asp>
- Interested parties can subscribe to a sustainable energy industry e-group by going to: www.egroups.com/group/SustainableEnergyIndustry and then follow the prompts.
- Delta Electricity has commenced co-firing trials at its Wallerawang Power Station near Lithgow. The biomass is radiata pine residues.
- The US based Institute for Local Self-Reliance continually updates its the Biomass Information Resources Page at <http://www.me3.org/issues/biomass/> Recent additions have been the following items:
 - Energy Power Resources Limited - UK
 - Microgy Cogeneration Systems Inc.
 - Ensyn
 - National Agroforestry Center - USDA
 - Salix Project - Willow Project in Wales
 - European Biomass Association
 - Italian Biomass Association
 - Swedish Bioenergy Association
 - Belgian Biomass Association
 - BIOSEM (Biomass Socio-Economic Multiplier)
 - Lessons Learned from Existing Biomass Power Plants - NREL, February 2000
 - NSP's Biomass Power Information
 - The Burning Question - lead article on biomass energy from the Spring 2000 issue of *The Carbohydrate Economy*, Institute for Local Self-Reliance, May 2000
 - The Economic Impacts of Bioenergy Crop Production on U.S. Agriculture - Marie E. Walsh et al, ORNL, May 2000
 - Renewable Energy Corporation Ltd.
- Recent additions to the ISL the Ethanol and Biofuels page <http://www.me3.org/issues/ethanol/> have been:
 - DOE's Office of Fuels Development
 - Ag Environmental Products
 - Biodiesel Development Corp.
 - Griffin Industries
 - World Energy Alternatives
 - The Other Gasoline Crises: Speeding Up The Shift From MTBE To Ethanol - Institute for Local Self-Reliance, September 2000
 - RFG/MTBE Findings & Recommendations - Northeast States for Coordinated Air Use Management, August 1999

- A United Nations Development Programme publication *Energy As An Instrument for Socio-Economic Development* includes the following:
 - *Community Biogas Plants Supply Rural Energy and Water: The Pura Village Case Study* by Amulya K.N. Reddy, P. Ragabapaiah and H. Somasekhar, International Energy Initiative, Bangalore, India. Web: http://www.undp.org/seed/energy/policy/ch_8.htm
 - *Biomass Plantation Energy Systems and Sustainable Development* by Eric D. Larson and Robert H. Williams, Center for Energy and Environmental Studies, Princeton University, Princeton, New Jersey, USA. Web: http://www.undp.org/seed/energy/policy/ch_9.htm
 - *Converting Biomass to Liquid Fuels: Making Ethanol from Sugar Cane in Brazil*. Isaias de Carvalho Macedo, Centro de Tecnologia Copersucar, Piracicaba, Sao Paulo, Brazil. Web: <http://www.undp.org/seed/energy/policy/ch10.htm>
- Since the previous *Bioenergy Australia newsletter*, US biodiesel industry leaders announced the results of a three-year, \$2.2 million EPA study confirming biodiesel's ability to reduce health risks associated with standard petroleum diesel. In compliance with US Clean Air Act testing, key industry players announced the results to an audience of Congressional leaders, the Department of Energy and fuel and agricultural industry officials. The full text is at: <http://ens.lycos.com/e-wire/June00/23June0001.html>
- Guidelines and material about the new Environment Protection and Biodiversity Conservation Act are available through Environment Australia's Internet site at <http://www.environment.gov.au/epbc>. Alternatively contact Environment Australia on 1800 803 772.
- A panel of US experts has created a list for energy production by 2010, considering technological advances, changing economics, expanding research and development, tightening global environmental regulations, consumer preferences, energy policy and legal issues. They predict that:
 - Distributed Generation, including power generated by microturbines, internal combustion engines and fuel cells, will become prevalent. Businesses, individuals, or neighbourhoods could choose to generate their own electricity.
 - Energy deregulation will continue. New, small utilities created as a result of deregulation will eventually remerge into Super Utilities.
 - Energy farms which grow bio-engineered crops solely for fuel will begin operation. The demand for fuel would bring new business to farmers who could grow both food and fuel crops. (Source: Green Energy News Inc. vol.5 no.17).
- Britain has a target of obtaining 5 percent of its electricity from renewable energy sources by 2003 and 10 percent by 2010.
- A *Bioenergy Glossary*, published by the US Oregon Department of Energy, is a useful compendium of more than 600 technical terms. Included in the glossary are general and specialised terms associated with bioenergy technologies. Web address is: http://rredc.nrel.gov/biomass/states/bio_glossary/
- The U.S. Department of Energy has selected Louisiana-Pacific (NYSE: LPX) and Ensyn Group Inc. to receive a US \$1.4 million grant to develop bark-based adhesives for use in the production of structural building materials, including oriented strand board (OSB) and plywood. Louisiana-Pacific and Ensyn received the Energy Department funding under President Clinton's 1999 Bio-based Product and Bioenergy Initiative designed to triple the U.S. production of fuels and chemicals from biomass by 2010. The Energy department's grant will be matched by funds from Louisiana-Pacific and Ensyn.
- In mid August the Vermont gasifier, located at Burlington Electric Departments' McNeil Generating Station, successfully completed a 24 hour endurance test, producing medium calorific gas from 285 tons of wood and producing 140 MWh electricity. This project is based on the indirectly heated process developed by Battelle Laboratories. The process is reported to have worked well with all major parameters indicating stable and consistent operation. Parametric testing has now begun. The 'SilvaGas' is presently combusted in the adjacent power plant furnace. A later stage is to use the gas to fire a gas turbine.

- The CD-ROM containing the Proceedings of the *23rd International Conference of the International Association for Energy Economics* held in Sydney, 7 - 10 June 2000 is available at a cost of \$110 (inclusive of GST and postage). Contact aace@unsw.edu.au.
- The US Department of Energy has announced awards of US \$8,036,000 for research in developing and testing clean burning fuels for co-firing in large-scale utility and industrial boilers. The funding was allocated to six organizations for experimental technologies over a two-year period. More information is available at: <http://www.doe.gov/news/releases00/julpr/pr00185.htm>
- The US DOE has awarded a one-year, US \$7 million subcontract to Genencor International of Palo Alto, California for research into developing less expensive enzymes that will reduce the cost of converting plant material into ethanol and fermentable sugars. Genencor will build on DOE's National Renewable Energy Laboratory work to use certain enzymes to convert wood chips, corn stalks and other biomass "waste" to ethanol. Genencor's research plan suggests a way to reduce the cost of these enzymes to about 5 cents US per US gallon of ethanol produced. <http://www.doe.gov/news/releases00/julpr/pr00187.htm>
- The US DOE has announced financial assistance of nearly US \$8 million over the next three years to encourage the U.S. biobased products industry to use crops, trees and residues to make plastics, paints, and adhesives. The funds will support six research and development partnerships and a new education initiative for encouraging multi-disciplinary research and teaching programs. <http://www.doe.gov/news/releases00/augpr/pr00216.htm>
- Agriculture Minister Warren Truss has announced that the Federal government will fund a study into the commercial viability of increasing ethanol fuel production by the sugar industry. The government study, estimated to cost \$20,000, would be co-ordinated by its commodities think tank the Australian Bureau of Agricultural and Resource Economics (ABARE).
- Queensland's 'A Cleaner Energy Strategy' released earlier this year mandates that electricity retailers source 15% of their power sold in Queensland from alternative energy sources. From January 2005 at least 13 percent must be sourced from gas and the remainder from renewable sources.
- The Asian Institute of Technology, Bangkok, Thailand is working on a 'Sida' funded project to develop and deploy briquetting systems and briquette stoves. The briquetting machine under development is a heated-die type with a capacity of 90-100 kg/hour. More information about the Sida supported regional program can be found on website: <http://www.retsasia.ait.ac.th/>
- The ABC *Earthbeat* program aired a segment entitled 'Burning Forests for Electricity Tasmania's Huon Valley' on 14 October. The transcript is on their web site at www.abc.net.au/rn/science/earth/stories/s2700741.htm
- Jaako Pöyry Consulting has produced a 108 page document paper "Climate Change: An Industry Position Paper" which is available for US \$750 plus GST. Tel: (02) 6295 2777.

Opportunities Corner

The Biomass Taskforce would like to assist and facilitate biomass and bioenergy projects by providing information and industry contacts to link project developers, resource managers, energy companies, and sources of finance. If you or your organisation are interested in such assistance, please contact Steve Schuck for a free listing.

- CVC REEF is seeking investment opportunities in Australian renewable energy companies. Under the Renewable Energy Equity Fund Licence Agreement, Eligible Investments for CVC REEF are defined as Australian companies that are commercialising the results of R&D into renewable energy or related enabling technologies. Potential investee companies must be at the Seed, Startup or Early Expansion stages, with average

annual revenue generally not exceeding \$4 million over the last two years and neither of the last two year's revenue exceeding \$5 million.

CVC REEF will make investments in the \$1 - \$3 million range by taking equity in the investee company or through quasi-equity convertible notes in the business. These investments will be expected to provide CVC REEF with an internal rate of return considerably better than bank interest rates and they must all be realised before September 2010.

If you believe that your company fits this profile, please contact Merv Johnston or Griff Rose on 02 6257 0000.

- The Minister for Western Sydney, Kim Yeadon recently formed a high profile Taskforce to help implement the Environmental Strategy for Western Sydney. One of the action-areas is the development of systems and infrastructure to ensure management of wastes as resources within the region. A working group of the Taskforce wishes to facilitate commercial opportunities for waste/resource processing, refining and value adding infrastructure (including bioenergy facilities). Should you have experienced any barriers relating to planning, licencing, approvals or co-ordination between Government departments generally, the working group would like to hear from about it, so appropriate action can be taken. The criteria for appropriate projects are: focused on recovering resource value from 'wastes'; projects fully committed by proponents but experiencing unnecessary delays; located in Western Sydney (15 Council areas); and could benefit from the combined support, facilitation, coordination, of the 'whole-of-Government' Western Sydney Environmental Taskforce.

In the first instance please contact: Mark Glover, Eco Waste Pty Ltd, Tel: 02 9664 5552, Mobile: 0417 224 919 Email: mark@ecowaste.com.au By Wednesday 15 November 2000.

Back Issues of Biomass Taskforce Newsletters – Downloadable from the Bioenergy Australia homepage: <http://www.users.bigpond.com/steve.schuck/abt>

The Biomass Taskforce Newsletter is a complimentary service provided by the Biomass Taskforce to stimulate interest in biomass and bioenergy in Australia. Email is the preferred way of distributing these newsletters. **Should you have received your copy by post, and you have email, it would be appreciated if you would inform Steve Schuck** (email: Steve.Schuck@bigpond.com) **of your email address.**

Editor: Dr. Stephen Schuck, Bioenergy Australia Manager

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

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7 Grassmere Rd, Killara, NSW 2071
Phone/Fax: (02) 9416 9246
Email: Steve.Schuck@bigpond.com
Web: <http://www.users.bigpond.com/Steve.Schuck/ABT>

Bioenergy Australia 2000 - Registration Form (PROGRAM ON

www.icms.com.au/bioenergyaust2000)

PLEASE NOTE: BIOENERGY AUSTRALIA 2000 WILL BE REGISTERED FOR GST AND HAS AN ABN PENDING. A TAX INVOICE WILL BE FORWARDED WITH YOUR CONFIRMATION OF REGISTRATION.

TO REGISTER FOR BIOENERGY AUSTRALIA 2000, COMPLETE THE DETAILS BELOW AND MAIL/FAX TO:

BIOENERGY AUSTRALIA 2000 CONFERENCE SECRETARIAT
LOCKED BAG Q4002
QVB POST OFFICE NSW 1230
AUSTRALIA

FAX: +61 2 9290 2444

Delegate Details—Please type or print clearly

TITLE.....GIVEN NAME.....FAMILY NAME.....

ORGANISATION.....

POSITION.....

ADDRESS.....

TOWN/SUBURB.....

STATE..... POSTCODE.....

COUNTRY.....

TELEPHONE.....FACSIMILE.....

EMAIL:

Registration Fees

FEES QUOTED ARE INCLUSIVE OF 10% GST

	PRE 31 OCT 2000	POST 31 OCT 2000	ON-SITE	TOTAL COST
BIOENERGY AUST MEMBER	\$400	\$500	\$550
NON-MEMBER	\$500	\$600	\$650
FARMER OR STUDENT*	\$250	\$250	\$250

* THE FARMER/STUDENT FEE IS SUBJECT TO APPROVAL AND STATUS MUST BE VERIFIED

OPTIONAL CONFERENCE TOUR \$120

REGISTRATION TOTAL

Accommodation Requirements

ACCOMMODATION WILL BE PROVIDED ON SITE AT THE GRAND MECURE HOTEL,
81 SURF PARADE, BROADBEACH, QLD 4218

DATE OF ARRIVAL.....	DATE OF DEPARTURE.....	TOTAL COST
STANDARD SINGLE ROOM	\$136 PER NIGHT (INCL. GST & BREAKFAST)
STANDARD TWIN/DOUBLE ROOM	\$152 PER NIGHT (INCL. GST & BREAKFAST)

ACCOMMODATION TOTAL

IF SHARING WITH ANOTHER DELEGATE PLEASE ADVISE NAME OF PERSON SHARING. SHARE NAMES MUST BE SUBMITTED FOR HOTEL SECURITY REASONS.

NAME:.....

Payment Summary & Details

REGISTRATION TOTAL

ACCOMMODATION TOTAL

GRAND TOTAL

ALL PAYMENTS MUST BE MADE IN AUSTRALIAN DOLLARS ONLY. PLEASE MAKE ALL CHEQUES OR MONEY ORDERS PAYABLE TO BIOENERGY AUSTRALIA OR PLEASE CHARGE MY CREDIT CARD:

CREDIT CARD PAYMENT (PLEASE TICK WHICH IS APPLICABLE) BANKCARD MASTERCARD VISA
AMEX DINERS

CARD NUMBER

EXPIRY DATE.....

CARDHOLDERS
NAME.....

Cardholder's
Signature.....