



Biomass Taskforce

Issue 2 of 1998

Biomass Taskforce Establishes Internet Web Home Page

The Biomass Taskforce has established an Internet site at URL:

<http://www.users.bigpond.com/Steve.Schuck/ABT>

to provide general information on the Biomass Taskforce, copies of Biomass Taskforce reports, back issues of the Biomass Taskforce newsletters, and alphabetical links to numerous other Internet sites. Biomass Taskforce information will be posted to this site from time to time. In the two months since a counter was installed, the site has had over 220 "hits".

IEA Bioenergy End-of-Task XII Meeting - Canberra 17-20 March 1998

The International Energy Agency's Bioenergy program members held their End-of-Task meeting to present their accomplishments from 1995-1997 in Canberra from 17-20 March 1998. Task XII was the largest of the 1995-97 Tasks, and covered biomass production, harvesting and supply. Approximately 40 overseas delegates attended this closed meeting. A small Australian contingent was also invited to this meeting, which included a study tour of the CSIRO's effluent irrigation project and a visit to the Laminex MDF plant, both near Wagga Wagga, NSW. The Biomass Taskforce provided financial support to enable this meeting to be held in Australia.

The meeting was also attended by the Chairman of the IEA Bioenergy Executive Committee, Dr Olav Gislerud, and by each of the the Operating Agents for the following Tasks: Biomass Conversion; Energy Recovery from Municipal Solid Waste; and Greenhouse Gas Balances of Bioenergy Systems. One of the main reasons for this high power delegation coming to Australia was to solicit interest and to provide information to facilitate Australia joining IEA Bioenergy.

The meeting commenced with overview presentations on IEA Bioenergy, and the four Tasks for 1995-1997. This was followed by Activity reports for Task XII; Biomass Production, Harvesting And Supply. Presentations were given on Activity 1.1 *Forest Management*, Activity 1.2 *Harvesting*, Activity 2.1 *Production Systems*, Activity 2.2 *Pests*, Activity 2.3 *Stock Improvement*, Activity 3.1 *Liquid Biofuels*, Activity 3.2 *Lignocellulosic Solid Fuel*, Activity 4.1 *Feedstock Preparation*, Activity 4.2 *Environmental Issues* and Activity 4.3 *System Studies*. The Biomass Taskforce Manager has one page summaries of each of these presentations. The full papers are to be published by the Canadian Forest Service.

An outline of the new IEA Bioenergy Task structure and plans for 1998-2000 were presented. This was followed by three short papers from Australian delegates to give an overview of some research activities and organisation of the biomass industry. Dr Paul Fung of the CSIRO Forestry and Forest Products gave a presentation on CSIRO research relevant to renewable forest biomass energy, Alan Cummine representing Dr Russell Reeves gave a presentation on ethanol and the activities of APACE Research, and the Biomass Taskforce Manager, Dr Stephen Schuck gave a presentation on the Australian Biomass Taskforce.

IEA Bioenergy – Move to Australian Participation

The Biomass Taskforce wishes to assess if there is sufficient interest for an Australian consortium to participate in the International Energy Agency's Bioenergy program. The program operates on a three year cycle, with the current Tasks for 1998-2000 having recently commenced. There are ten Tasks in all, with member countries able to choose their participation level. The current Tasks are:

- Short Rotation Crops (including short rotation forestry)
- Conventional Forestry Systems for Bioenergy
- Biomass Combustion (including co-firing)
- Thermal Gasification of Biomass
- Pyrolysis
- Techno-Economic Assessments for Bioenergy Applications
- Energy from Thermal Conversion of MSW and RDF
- Energy from Biological Conversion of Organic Waste
- Greenhouse Gas Balances of Bioenergy Systems
- Biotechnology for the Conversion of Lignocellulosics to Ethanol

The Biomass Taskforce has agreed to pay the fixed national contribution to the Executive Committee to facilitate the formation of participating consortia.

The direct Task costs per country range from US \$7,268 for the Gasification Task to US \$15,770 for MSW Thermal conversion. There would be additional costs associated with participating in overseas meetings.

The IEA Bioenergy has its home page at URL: <http://www.fri.cri.nz/ieabioenergy/home.htm>

Should you wish to obtain information on this program and the Biomass Taskforce's effort to form participating consortia, please contact Steve Schuck on tel/fax: 02-9416-9246, or email Steve.Schuck@bigpond.com

Rural Industries Research and Development Corporation Assumes Lead Role

The Rural Industries Research and Development Corporation will be assuming the role previously filled by the ERDC in managing the finances and other administrative functions for the Biomass Taskforce. RIRDC has been contributing to the Taskforce through its Joint Venture Agroforestry Program. Mr Tony Byrne is RIRDC's representative in the absence of Dr Roslyn Prinsley, who is currently on maternity leave.

CSIRO Division of Energy Joins the Biomass Taskforce

The CSIRO Division of Energy Technology (formerly the Division of Coal and Energy Technology) has joined the Biomass Taskforce as an Associate Member. This Division has recently raised its interest in renewable energy sources, including energy from wastes and biomass.

Visit to USA by Biomass Taskforce Manager

Dr Stephen Schuck, the Biomass Taskforce Manager visited a number of United States biomass establishments from 30 March – 7 April 1998. These included:

National Energy Research Laboratory (Golden, Colorado)

Meetings and discussions were held regarding the latest developments in power from biomass, primarily gasification of biomass and the US \$14 million, 200t/d gasifier undergoing commissioning at Burlington, Vermont. NREL also has a dynamic program developing new and innovative ways of using biomass for displacing petrochemicals. The aim is to produce commodity type chemicals from renewable sources, and displace the huge amounts of energy consumed as raw materials by the chemical and petroleum industries by 2030. NREL is researching and developing ethanol production from wood with a target price of US16c/litre. NREL has a 250 litre/hour ethanol pilot plant. S Schuck also gave a seminar to a group of approximately 20 NREL staff on Australian activities in biomass and the Biomass Taskforce.

American Bioenergy Association and the Biomass Energy Alliance (Washington DC)

The ABA is an advocacy group, while the BEA is an educational and outreach program funded by the US Department of Energy. The ABA is very supportive of ethanol as a transport fuel, which currently comprises one percent of the USA's transport fuel. Much of this ethanol is derived from corn, with subsidies to that industry amounting to about US \$500 million per year.

United BioEnergy Commercialization Association (UBECA) (Washington DC)

UBECA is a twenty-four member trade association, funded two-thirds by the US Department of Energy. They evolved from the Utility BioEnergy Commercialization Association, and are strong advocates and promoters of co-firing biomass with coal in utility boilers.

Energy Research Corporation (Washington DC)

The Energy Research Corporation are the developers of molten carbonate fuel cells and have demonstrated a 2 MW fuel cell in California for over 5,700 hours at a net efficiency of 44 percent. They are developing biomass for fuelling the fuel cells, including a gasification and an anaerobic digestion project.

US Department of Energy (Washington DC)

A meeting was held with the leader of the US DOE Biomass Power Team. A wide range of topics were covered, including co-firing with coal. A strong alliance is being sought with coal energy interests. FETC (Federal Energy Technology Center) is leading the work for the US DOE. EPRI is also involved at 13 facilities with two power plants of 350 MW operating on 5-10 percent biomass.

National Bioenergy Industries Association (NBIA) (Washington DC)

NBIA represents the interests of equipment manufacturers and provides information to politicians, the media and to government departments and provides codes and standards. They also have a focus on export markets. NBIA has 102 company members.

Future Resources Associates/Green Power Institute (Berkeley California)

Dr Gregg Morris is a leading consultant in the US on biomass energy and has conducted a number of studies for NREL. This visit was to get a rounded perspective on the US biomass scene and regulatory developments in California, where much of the US's biomass plant is located.

SEDA Conducts Two Biomass Energy Studies

NSW's Sustainable Energy Development Authority is conducting two biomass resource and technology studies; one on forestry wastes and the other on wet digestible wastes. It is understood that the forestry study has been awarded to a consortium of Enecon and the CSIRO Division of Forestry and Forest Products. Bids for the wet wastes study closed late May 1998.

Biomass on the Internet

The Internet provides a valuable source of information on biomass. Below are some Internet addresses to supplement the addresses given in the first three Issues of the Biomass Taskforce newsletters. These are all being consolidated on the Biomass Taskforce's web page.

Federal Energy Technology Center (FETC- interest in co-firing biomass with coal)

<http://www.fetc.doe.gov>

Centre for Alternative Transportation Fuels

<http://bcr3.bcr.bc.ca:8069/catf/carf.nsf>

Dekker publications (including some biomass)

<http://www.dekker.com>

Dekker publications' details on "Thermal Data for Natural and Synthetic Fuels"

http://www.dekker.com/cgi-bin/webdbc/md/detail.htx?d_cat_id=0070-8

Australian Cogeneration Association

<http://www.cogen.com.au>

Transnational Technology (biomass charcoal)

<http://www.techtp.com>

Fern Engineering, Inc (energy conservation and gas turbine consultants)

<http://www.capecod.net/ferneng>

University of Adelaide (Paul Harris' biogas page)

<http://www.roseworthy.adelaide.edu.au/~pharris/biogas>

RFP Online (database of Request for Proposals – USA based. Headlines from Energy Central)

<http://www.energycentral.com>

HRL Technology Pty Ltd

<http://www.hrl.com.au>

Alternative Technology Association

<http://www.ata.org.au>

Brazilian Ethanol study

<http://www.mct.gov.br/gabin/cpmg/climate/program/ingl/coperal5.htm#Analysis>

Institute of Local Self Reliance Ethanol site

<http://www.ilsr.org/carbo/ethanol/netethan.html>

Landfill dictionary (Lulea University of Technology, Sweden)

<http://www.sb.luth.se/ut/indexe.html>

Utrecht University Biomass

http://www.chem.ruu.nl/nws/www/research/ee/biomas_a.htm

FAO-Regional Wood Energy Development Programme (Bangkok)

<http://www.rwedp.org>

Western Regional Biomass Program (USA)

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

Australian New Zealand Solar Energy Society

<http://eureka.arch.unsw.edu.au/faculty/arch/solarch/anzses/anzses.htm>

Center for Renewable Energy and Sustainable Technology (CREST)

<http://solstice.crest.org/>

Practically Green (Northern Ireland)

<http://www.practicallygreen.com>

Translating Foreign Language Web Articles

Occasionally one comes across a non-English language article on the web. This can be translated for free using: <http://babelfish.altavista.digital.com/cgi-bin/translate?>

Greenhouse Office Public Consultation on 2% Renewables

The newly formed Greenhouse Office held a series of forums in Brisbane, Sydney, Melbourne, Perth and Adelaide during the week of 25 May to discuss and receive feedback on two Issues Papers, "Efficiency Standards for Power Generation" and Mandatory Targets for the Uptake of Renewable Energy in Power Supplies". The purpose of this consultation process is to give the opportunity for community stakeholders to be involved in developing proposals for implementing these greenhouse gas abatement measures.

The Greenhouse Office will be accepting written submissions on these papers until 26 June 1998. For further information contact the Greenhouse Office on phone: 02-6274-1034.

Utility Co-Firing Experience

Co-firing biomass with coal is an effective way of providing biomass energy using an existing coal fired power plant. Co-firing of biomass is typically limited to no more than 20 percent of the fuel input. Benefits can include:

- Provision of renewable energy with minimal capital expenditure
- Disposal of waste biomass
- Price of biomass may be below coal price, lowering fuel cost
- Biomass has very low levels of sulfur (typically < 0.05 percent)
- NO_x may be reduced beyond level of co-firing.

The Tennessee Valley Authority has been active in developing biomass co-firing, and over a two year period found no evidence of accelerated slagging and fouling of heat transfer surfaces, fuel blends had very little impact on flame temperature and no impact on stack opacity.

Utility experience includes:

- Greenidge, Unit 4, 104 MW (Dresden, New York) Biomass firing rate 15.7 MW saving 112,18 t/a carbon dioxide.
- Brunner Island, Unit 1, 322 MW (York Haven, Pennsylvania) Biomass level 16.1 MW, saving 102,104 t/a carbon dioxide.
- Portland, Unit 1, 200 MW (Portland, Pennsylvania) Biomass level 10.0 MW, saving 50,370 t/a carbon dioxide.

- A.S. King Station, 560 MW (Bayport MN) Biomass level 5 percent.
- Allen Station, 2x270 MW (Memphis, Tennessee) Biomass level up to 20 percent.

References:

Biomass Assessments for Co-Firing, Jeffery E. Fehrs, Proceedings of the Third Biomass Conference of the Americas, Montreal, August 1997.

Co-Firing, Friend or Foe, World Coal, December 1996, pp 38-42.

Project News

* The world's first trials of trees developed using DNA based selection systems were established by PT Monfori Nusantara, an Indonesian joint venture between Forbio Ltd, of Queensland and Monsanto America Inc., of the USA.

The selected trees were *E. Urophylla* x *E. Grandis* *Urograndis* from a tree nursery in China. These elite trees were cloned, using proprietary tissue culture methods, and the trial seedlings planted in Indonesia in 1996. The best results gave growth rates which would allow harvesting for woodchips in 3-4 years. This compares to present harvesting periods of 10-12 years for *E. Globulus* (Blue Gum) and 15-20 years for *Pinus Radiata*. (Item by courtesy of Converttech, NZ).

* It has been reported that Wollongong Council in collaboration with Energy Developments Ltd will be setting up a green wastes gasification plant at a landfill site. It is understood that the intention is to co-fire landfill gas and producer gas to produce electricity for sale into the grid. The project will use the Brightstar Synfuels gasification technology.

Biomass Energy Books from the Biomass Energy Foundation Press

Biomass energy books, primarily on gasification, are available at reasonable prices direct from the Biomass Energy Foundation Press. Titles include:

Handbook of Biomass Downdraft Gasifier Engine Systems, T.B. Reed and A. Das, 200pp, US \$25.

Fundamental Study and Scaleup of the Air-Oxygen stratified downdraft gasifier, T.B. Reed, M. Graboski and B. Levie, 250 pp, US \$30.

Contaminant Testing for Gasifier Engine Systems, A.Das, 32pp, US \$10.

Small Scale Gas Producer-Engine Systems, A. Kaupp and J. Goss, 278 pp, US \$30.

Gasification of Rice Hulls: Theory and Praxis, A. Kaupp. 303 pp, US \$30.

Biomass to Methanol Specialists' Workshop, Ed B.T. Reed and M. Graboski, 331 pp, US \$30.

Evaluation of Gasification and Novel Thermal Processes for the Treatment of Municipal Solid Waste, W. Niessen et al. 1996 NREL report. 198 pp. US \$25.

Airmail postage is US \$9 per book. For details regarding ordering contact Tom Reed by email at reedtb@Compuserve.com, or mail orders to The Biomass Energy Foundation Press, 1810 Smith Rd., Golden CO 80401, USA. Fax (0015 1 303) 278- 0560. The Biomass Taskforce Manager, Steve Schuck can supply further information if required.

Computer Program for Assessing Anaerobic Digestion Systems

A Windows[®]-based computer program that provides a preliminary technical and economic feasibility assessment for the anaerobic digestion of animal manures, industrial waste and wastewaters, MSW, or combinations (e.g. co-digestion) has become available as part of the IEA Bioenergy's MSW Task. A free demonstration copy can be obtained from the vendor at URL: <http://www.softplus.net/industrie/biogas/dateien.htm>

Demonstration copies are full working programs with limited printing capability and limited number of projects that can be calculated.

Interesting Fact

Worldwide, there are more than 115 anaerobic digester (AD) plants operating or under construction using municipal solid waste (MSW) or organic waste as their feed stock. The total annual capacity is almost five million tonnes. Another 40 AD plants are at the planning phase with an annual capacity of nearly two million tonnes.

The use of AD for treating industrial wastewater has grown tremendously during the past decade to the point where there are now more than 1000 vendor-supplied systems in operation or under construction throughout the world.

Australia has a prime example of AD technology; the egg shaped digesters at Woodman Point, 10 km south of Fremantle, Western Australia.

Forthcoming Events

Biomass for Energy and Industry. 10th European Conference and Technology Exhibition. 8-11 June 1998. Würzburg, Germany.
Tel: +49 89 720 1232, Fax: +49 89 720 1291. Internet: www.wip.tnet.de

Bioenergy '98, October 4-8 1998. Madison, Wisconsin, USA. Great Lakes Regional Biomass Program. Internet: <http://www.cglg.org/bioenergy98/>

Meeting Victoria's Power Needs with Embedded Generation (Breakfast Briefing). Co-hosted by the Australian Cogeneration Association and the Energy Users Group. 7:45 – 10:30 am, 11 June, Australian Chambers of Manufactures, Melbourne. Call 03-9530-6777 for details.

4th International Renewable Energy Asia-Pacific '98 (REAP'98). Conference and Exhibition, 14-16 October, 1998, Shanghai, China. Contact Tracey Cook. Email: info@adal.com. Fax: +852-2574-1997

1998 Fuel Ethanol Workshop International, South Bend, Indiana USA, July 8-10, 1998. For information email: ethoh85@aol.com, Ph: (0011- 1- 719) 942-4353.

1998 Australian Global Warming Conference "Turning Down the Heat", Yamba NSW. 17&18 September, 1998. Contact: lsc@nor.com.au, Ph: (02)6645-4014, Fax: (02)6645-3057.
