

## COAL NEWS

### NEW ZEALAND

#### **Solid Energy awarded West Southland coal exploration permit**

Solid Energy has been awarded a coal exploration permit in a greenfields area of Western Southland near the town of Tuatapere. The permit covers an area of 4166 hectares on the eastern side of the Waiiau Basin towards the Longwoods Range. The Cretaceous/Cenozoic sediments in the Waiiau Basin are known to contain coal measures equivalent in age and depositional environment to the sub-bituminous Morley and Beaumont coal measures that have been mined in the Ohai area for 150 years.

Solid Energy says the coal measure sediments lie near the base of the sequence in the middle of the basin, at depths well beyond the capability of current mining methods. However, recent detailed mapping and analysis of historic seismic data suggests that the coal measures may have been brought closer to the surface by faulting near the basin margin around the Longwood Range.

The next phase of exploration activity will include further detailed mapping and targeted drilling to answer specific questions about depositional environment, structure, and stratigraphy. The permit work programme calls for a minimum of 2 drill holes within three years.

Solid Energy is also undertaking a six-month exploratory drilling programme in Eastern Southland starting near the site of the former Mataura opencast lignite mine, extending to the north and west. Drilling will also be undertaken in the Croydon area to the north of Mataura coalfield, as well as south of Mataura. The Mataura lignite field is the largest in New Zealand with an estimated in ground resource of about 2.1 billion tonnes. The Mataura field contains 10 seams with maximum thicknesses between 0.9 and 16 metres.

#### **Pike River Coal project's tunnelling rate rises**

The Pike River project on the West Coast is making strong progress on a number of fronts, having faced and overcome some challenges during the period.

Construction activities at the mine site, situated 46km north-east of Greymouth, are progressing well with tunnel development 450m towards its 2300m end point at the Brunner coal seam.

Progress since January of 275 m reflected improving rates of advance since the tunnel commenced in late September 2006. Initial projections of the rock type, made from surface mapping, have been revised and reforecast based on actual conditions encountered in the tunnel. To date, approximately \$55M has been spent on construction activities at the mine and equipment purchases.

Major activities on site include 11.5km of road from the public road end to the tunnel entrance, construction of seven bridges, clearance of 16ha of land for installation of the mine's bathhouse, substation, coal preparation plant and stockpile areas and terracing of the amenities area located 1.2km down the valley from the tunnel entrance.

Contracts are in place for the purchase of two continuous miners and one roadheader which will develop the underground roadways in the coal seam as well as other mining and transport equipment required for the mine. The arrival of the final shipment of slurry pipeline from Japan means all 10.5km of pipe is stored in Greymouth awaiting installation.

#### **L&M examining options for coal gas**

Christchurch mining company L & M Group is examining options for use of commercial quantities of gas it has discovered in coal seams, mainly in Southland and Otago. L & M, owned by private offshore investors, is progressively working through 13 permit areas in

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Southland, Otago and Waikato assessing the production potential of coal seam gas. The company considers it has at least five areas where that will be possible, two near Winton and Ohai in Southland, one at Kaitangata south of Dunedin, one at Hawkdun west of Dunedin and another in north Waikato.

The company is completing economic and technical studies but is optimistic at this stage that all five will prove commercial. In total L & M Group assessed there was up to 300 PJ of gas in the five permit areas.

L & M said coal seam gas could be used to fuel a small new power station near the source or it could be piped to a site for industrial use or compressed on site and shipped to other places for use. Coal seam gas has not yet been commercially produced in New Zealand, though it is being produced in Australia and the United States. L & M expects to have a pilot production plant running before the end of 2007 but was still evaluating where this would be.

### ***Eastern and Fonterra sign contract for Clandeboye coal supply***

Eastern Coal Supplies (owned by Queensland based Eastern Corporation) has won a major coal supply contract for its recently acquired Takitimu coal mine near Ohai in Western Southland. A 130,000 tonne a year contract to supply the Fonterra Clandeboye dairy processing site near Timaru has been agreed from September 2008.

Eastern's New Zealand general manager, Campbell Smith, says the two year contract with Fonterra will underpin the production of the company's Takitimu mine in the Ohai/Nightcaps area of Southland, acquired in September 2006. Eastern began producing coal in New Zealand in June 2005 when the company acquired the Cascade open cut coal mine near Westport.

## **INTERNATIONAL NEWS**

### ***Clean coal success hinges on price, not technical viability (Australia)***

Australian Coal Consulting Alliance convener Bede Boyle told the Queensland Energy 2007 conference in Brisbane that virtually all the elements of carbon capture and storage had been proven but not yet brought together at a commercial scale. He said that the issue is not whether the technology works but how much it's going to cost at a commercial scale.

Boyle suggested the commercial viability of low carbon-emitting coal-fired power stations was the key issue when analysing risks and opportunities in the energy sector, and the viability with respect to future competition from other energy sources.

Boyle predicted clean coal-fired power stations will become major suppliers to Queensland's energy grid between 2015 and 2020. However, environmental groups are right to point out that global warming will continue if nothing is done to mitigate CO<sub>2</sub> emissions in the meantime.

### ***Partners for clean coal partnership (Australia)***

Queensland is seeking partners in South Africa to help develop its clean coal technology. Queensland, which has coal reserves being mined by groups such as Anglo Coal, Xstrata and BHP Billiton, is investing A\$1 billion in clean coal technology.

Another area where partnerships could be useful is for South African companies hoping to do business in China, who could use Queensland's proximity to China as a base.

### ***Government backs clean coal power station (Australia)***

The Australian federal government will contribute A\$100M towards a new A\$750M brown coal power station to be built in Victoria using clean coal technology.

Industry Minister Ian Macfarlane said the technology to be used in the new plant had the potential to slash greenhouse gas emissions by 30%, with half the water consumption of conventional coal power stations.

The new plant, to be built next to the existing Loy Yang power station in Victoria's Latrobe Valley, will involve an integrated gasification combined cycle (IGCC) technology, which would lower the emissions from the coal burning process.

The Electricity Supply Association of Australia says research has been underway for some time to develop IGCC technology for use with brown coal. The federal contribution towards the project will come out of an existing \$500M government programme known as the Low Emissions Technology Demonstration Fund.

### **Tata Steel finalises plan to buy into a coal mine (Australia)**

Tata Steel has finalised a plan to buy into a coal mine in Australia, as part of a larger strategic plan to scout for global opportunities to secure raw material linkages, after acquisition of Anglo Dutch steel company, Corus.

Tata Group said that they are looking at how they can align with Corus and buy into or partner with coal and iron ore producers to meet its global needs. Tata has put in a proposal for a coal mine in Australia and is scanning elsewhere across the world.

### **Largest coal province launches sustainable mining fund (China)**

Northern China's Shanxi Province has launched a pioneering fund to support more sustainable mining practices in the region.

The money will be spent on tackling the environment degradation caused by local coal mining, on developing alternative industries in mining communities, and on improving mine safety. Funds will be derived from variable fees levied on all companies and individuals that mine in the province and will be collected by local taxation authorities.

The fee charged to mining companies will vary annually within a predetermined range, depending on the type and amount of coal produced. For 2007, the per tonne amount has been set at 14 yuan (US\$1.80) for steam coal, 18 yuan (US\$2.30) for hard coal, and 20 yuan (US\$2.60) for coking coal.

The Local Taxation Bureau of Shanxi predicts annual revenues of up to 15 billion yuan (US\$1.9 billion) from the fund, based on the roughly 600 billion tonnes of coal produced in the province last year.

The aim of the fund is to account for the "real" costs of mining by including the costs of coal use, worker safety, environmental pollution, and shifting from mining to other industries. The fund will help raise the threshold for investing in coal mines, as well as hinder smaller mines from making huge profits.

### **Petromin/Shanxi Energy coal energy agreement (China)**

Petromin Resources Ltd has entered into an agreement with Shanxi Energy Inc. of Taiyuan, China. Shanxi Energy Inc. is a designated state owned coal energy development company, fully established and organised by the Shanxi Province Development and Reform Commission.

The Petromin/Shanxi Energy Coal Energy Agreement addresses cooperation in the development of the following projects in Shanxi Province:

1. CO<sub>2</sub> sequestration in deep un-mineable coal seams;
2. Coal heap utilisation in power generation;
3. Surface Coal Mine Methane projects;
4. Other environmental energy related projects

In the agreement, Petromin will instigate and provide the technical support and requirements for the above projects while Shanxi Energy, through its own networks and control, will identify and locate project sites and entities (of other state coal companies, coal mine owners, coal bureaus etc.) for Petromin.

Shanxi Energy will also initiate and assist Petromin in the government approval and funding process. The partnership agreement has obtained endorsement and full support from the following departments:

1. Shanxi Province's Development and Reform Department
2. Shanxi Province's Environment Department
3. Ministry of Commerce
4. All other related agencies which administer enviro-energy projects in Shanxi Province

The agreement enables Petromin to start its first enviro-energy project site selection and assessment in Shanxi Province. The agreement also fits within the overall strategy for Petromin to promote CO<sub>2</sub> sequestration in China's Ordos Basin, and will lead to the development of future sites for large scale CO<sub>2</sub> sequestration projects and other clean coal development projects in the region.

### **Expansion of Qinhuangdao Port to improve coal transportation (China)**

The Qinhuangdao Port in Hebei Province is expected to handle nearly 200 billion tonnes of the fuel, once its six new berthing terminals are running at full capacity. Completed last year, the berths recently passed an acceptance test organized by the Ministry of Communications.

The multi-billion yuan expansion project will boost the port's annual handling capacity by 65M tonnes to 193M tonnes for coal transportation.

The ministry said it would ease the bottleneck in coal transportation from inland areas of North China to East and South China, and satisfy demand from the booming coastal areas. The ministry also plans to speed up the expansion of six other ports in northern China, namely Tianjin, Tangshan and Huanghua in Hebei Province, Qingdao and Rizhao in Shandong Province and Lianyungang in Jiangsu Province.

#### **Companies sign coal development joint venture MoU (Ethiopia)**

Derba Midroc Cement and East Africa Holdings have signed a Memorandum of Understanding to establish a US\$60M joint venture company for exploring and developing a more than 20M tonnes coal deposit at Moye area located 70km from Jimma.

The agreement provides for establishment at the Moye area of a coal manufacturing plant, which is expected to supply the power required in the country's cement production, thereby sparing the current expenditures on oil. It has been proven that up to 20MW can be generated by using coal, which will offer other industries an alternative for power consumption.

At full capacity production, Derba Cement Factory will be producing 8,000 tonnes per day. East Africa Holdings is also constructing a 3,000 tonnes per day capacity factory near Dire Dawa.

#### **Planning for 26 coal fired power plants (Germany)**

German Chancellor Angela Merkel supports constructing 26 coal fired power plants, despite her strong environmental stance. Merkel says the plants would create thousands of jobs and spur US\$40 billion in German investment. They would also replace older, dirtier plants.

#### **GAIL to set up coal gasification plant (India)**

State-run Gas Authority of India Ltd (GAIL) is setting up a coal gasification plant in Orissa state for coal conversion. GAIL has already finalised the detailed feasibility report on the project and Talchar was selected as the most suitable place to set up a coal gasification plant.

The company has set in motion the process of signing an agreement with Coal India Ltd. for jointly evaluating the project.

#### **Coal sector to get annual road map (India)**

The Prime Minister's Office has directed the coal ministry to furnish an annual road map for meeting production targets laid in the Eleventh Five-Year Plan. The road map would identify coal sources, which would help producers to increase production by planning the steps required to be undertaken for realising targets.

The projected demand for coal is expected to reach 730M tonnes by 2011-12. Coal India Ltd is likely to produce 521M tonnes, while Singareni Collieries Company Ltd would produce 40M tonnes and others, including the private sector, 119M tonnes. The shortage of 50M tonnes will comprise 40M tonnes of coking coal and 10M tonnes of thermal coal. The coal ministry hopes to meet the gap through imports.

#### **Continued domination of the Asian coal market (Indonesia)**

Indonesia will likely continue to dominate the Asian coal market at least until 2020, despite the government's policy of directing more coal supplies to the domestic market.

Industry specialist McCloskey recently said that with its massive coal reserves, Indonesia would be the only coal producer that could fulfill the expected surge in future coal demand in the region.

Coal demand in Asia would continue to increase over the 13 years up to 2020 due to an increase in coal usage in most Asian countries, including India, China, and South Korea.

Indonesia is expected to produce 183M tonnes of coal this year, about 134M tonnes of which would be exported. Next year, production is projected to increase to 198M tonnes, about 145M of which will be exported.

Based on government estimates, total coal production will reach 320M tonnes in 2020, 170M tonnes of which will be allocated for domestic use, while the remaining 150M tonnes will be exported.

In 2025, coal production is expected to increase to 370M tonnes, of which about 220M tonnes will be allocated for domestic use. The increase in the allocation of coal for the domestic market would not really affect the country's coal export plan as the surge in local demand could be filled by lower grade coal.

### **Clean coal developments (Poland and Czech Republic)**

Poland and the Czech Republic lack significant reserves of oil and natural gas but possess large reserves of both lignite and hard coal. Coal dominates Polish energy, supplying around two-thirds of the country's primary energy demand and producing most of its electricity.

Despite predicted decreases in future production and consumption within the country, and competition from other fuels, there seems little doubt that coal will remain crucial to the Polish economy for many years.

In the Czech Republic, coal supplies around half of the country's primary energy and is used to generate around two-thirds its electricity. The balance of electricity is provided mainly by nuclear power. During the past 10–15 years, several major modernisation programmes have been undertaken by the power generation sector and most conventional power plants have been comprehensively equipped with modern control systems to minimise emissions of SO<sub>2</sub>, NO<sub>x</sub> and particulates.

Many conventional Polish power plants have been modernised, and significant investment has been made in replacing some outdated capacity with circulating fluidised bed combustion (CFBC) based systems. Around 20 major coal fired CFBC units are now in use for electricity generation or other industrial applications. These operate with subcritical steam conditions although a new 460MW project at Lagisza is deploying supercritical conditions. This will be the first supercritical once-through CFBC boiler in the world. This enables steam turbine efficiencies to be increased by ~3%.

The technology is expected to provide high plant efficiency with the other well-established benefits of CFBC technology. Calculated net plant efficiency is >43%. Further supercritical CFBC projects may be undertaken in the future although developers are likely to monitor developments at Lagisza before committing to any major programmes.

Apart from CFBC based systems, several other types of clean coal technologies are presently in operation or under development within the country. Pulverised coal technology using supercritical steam conditions is being increasingly considered for new generating capacity.

### **Asian firm snaps up SA coal (South Africa)**

A North Asian company has bought South African coal for the first time in about three years, despite the long shipping distance, to compensate for tight local supplies. The deal is for 45,000 tonnes of high quality coal delivered in three shipments during this year.

The news confirms weeks of speculation that North Asian importers, squeezed by tightening supplies from China and Indonesia, have started to buy coal from South Africa despite higher freight costs and the longer distance.

Industry sources have said Taiwanese and Korean companies have been looking to buy South African coal to avoid long waiting times at Australia's Newcastle port and to replace the loss of supply from China, which has become a net importer this year.

### **Expert Meeting on Financing CCS Projects (UK)**

The IEA Clean Coal Centre and the IEA Greenhouse Gas R&D Programme with sponsorship from Rio Tinto and the World Coal Institute will be holding an Expert Meeting on Financing Carbon Capture and Storage (CCS) Projects, on 31 May – 1 June in London, UK.

Attendance at the meeting will be limited to a total of 80 participants. The meeting will be chaired by Preston Chiaro, Chief Executive, Rio Tinto Energy.

The meeting aims to increase the involvement of experts from the financial sector in the development of CCS projects. In order to do this the meeting will be by invitation only with banking, insurance, venture capital and other financial experts invited to participate. It will provide an opportunity for discussion on possible financial instruments with industry and government representatives. It will identify, encourage and develop worldwide collaboration and practical development of financial mechanisms to accelerate the use of CCS projects from R&D to commercial reality.

The UNFCCC Twelfth Conference of Parties (COP) at the end of 2006 has effectively delayed the use of the Clean Development Mechanism (CDM) as a means of incentive until COP 14 in 2008. Therefore it is important to identify alternative financial options and frameworks to move forward the development and implementation of CCS projects.

The objectives of the meeting are to:

1. Identify key drivers on financing CCS projects by the financial sector;
2. Contribute to building financial mechanisms for demonstration CCS projects;
3. Gain access to financial information relevant for industry and Government investors in CCS projects;

4. Develop finance and business planning for CCS demonstration plants;
5. Discuss options for consortium arrangements for CCS demonstration plants;
6. Explore the use of futures, derivatives and insurance markets to reduce financial risks of CCS demonstration plants;
7. Determine whether to establish an International Network for CCS Financial Instruments to encourage and develop worldwide collaboration and practical development of financial instruments to accelerate the use of CCS projects from R&D to commercial reality.

Some of the speakers confirmed are from Fortis Bank, Climate Change Capital as well as from CCS project developers RWE, Statoil, Progressive Energy and SaskPower.

### **RWE unveils plans for new £1 billion coal fired power station (UK)**

RWE, the German utility which owns British energy supplier Npower has unveiled plans to build a £1 billion coal fired power station at Tilbury to replace existing capacity which is being closed down over the coming years.

The new plant, which will be capable of generating 1,600MW will use cleaner coal technology which would cut emissions by more than a fifth compared with traditional coal fired power generators and would also have the capability to add on CCS capacity.

Drax in Yorkshire, which was commissioned in 1974, was the last new coal fired power station to be built in Britain with coal subsequently taking a back seat to gas as the generators' fuel of choice. However, increases in the price of gas and concerns that companies needed to develop diversity of supply have pushed coal back up the agenda.

The announcement came as the government unveiled its climate change bill which sets a target of reducing Britain's greenhouse gas emissions by 60% by 2050.

Npower said it needed new generating capacity to replace existing capacity which will be taken out of service between 2008 and 2015 as new EU regulations on emission levels from power plants come into effect. The new coal fired plant fitted in with the government's climate change goals because it would lead to lower emissions and, by increasing fuel diversity, improve security of energy supply.

### **New coal plant receives green light (USA)**

A long challenged Central Texas coal fired power plant has a green light for construction. The plant had been held up by legal challenges from environmental groups and, for a period, the federal Department of Justice.

But in November, the federal government offered a settlement that would allow Alcoa Inc. and TXU Corp. to use an old permit at the site instead of having to apply for a new, stricter permit. The settlement offer eases a deal between the aluminum giant and the state's largest energy company for control of the plant, which powers an aluminum smelting operation in Rockdale, about 60 miles northeast of Austin.

The plant's new unit, known as Sandow 5, is one of three coal fired units TXU proposes to build. Plans for eight other units were withdrawn after the company was approached in a \$45 billion buyout deal. The 580MW unit is planned to come online in 2009.

## **TECHNOLOGY & OTHER NEWS**

### **CO<sub>2</sub>CRC project 'of international significance'**

The international climate change initiative, the Carbon Sequestration Leadership Forum, has endorsed Australia's first geosequestration project as a project of international significance. The nomination of CO<sub>2</sub>CRC's Otway project in south-western Victoria was formally endorsed by the USA and approved unanimously by 20 countries. CO<sub>2</sub>CRC drilled a 2200m injection well in February initially to enable geologists to obtain rock samples against which they could compare their computer models of the storage site. The samples have confirmed that the computer models of the underground storage site and its rock characteristics are correct. CO<sub>2</sub>CRC expects to begin injecting up to 100,000 tonnes of CO<sub>2</sub> later this year.

### **Research hub to fast-track capture technologies**

Australia's first research hub to fast-track the maturity of technologies that capture greenhouse emissions from brown coal fired power stations is being developed in the Latrobe Valley in eastern Victoria. CO<sub>2</sub>CRC, Loy Yang Power, International Power and CSIRO are working on a A\$5.6M research project that focuses on seven interlinked research, plant-testing and evaluation tasks. It has the backing of the Victorian Government, which has provided \$2.5M of the

project funds under the Energy Technology Innovation Strategy. CO<sub>2</sub>CRC researchers from Melbourne and Monash Universities and CSIRO researchers will develop carbon dioxide capture technologies which will be tested at Loy Yang Power and International Power's Hazelwood Power Station.

This is in addition to a world first project to trial pre-combustion CO<sub>2</sub> capture technologies to be undertaken jointly by CO<sub>2</sub>CRC and HRL Developments. This trial, to be undertaken at HRL's Mulgrave research gasifier, will test recently patented CO<sub>2</sub>CRC technology along with other solvent based, membrane and adsorption capture techniques. Researchers will evaluate the capture technologies to identify the most cost effective application for HRL's Integrated Drying Gasification Combined Cycle power generation technology. The Victorian Government is contributing \$2.1M to the \$4.1M cost of the trial.

### **Australian research on public perceptions of power sources**

The Queensland Minister for State Development released in April the results of a detailed research project undertaken in Queensland and NSW into public perceptions of new power generation technologies and how they contribute to global warming. The project found there is high public demand for information about new energy technologies and declining tolerance for advocacy of a single solution.

Conducted by CSIRO for the Centre for Low Emission Technology (cLET), the research also indicated that while 88% of respondents preferred solar power, after being apprised of some of the problems associated with generating and storing solar, they were willing to consider a range of alternatives. There was a general lack of awareness about what is actually being done to address climate change, including development of low emission technologies. However, once respondents were included in discussions about subjects such as CCS, they were likely to be more positive towards the technology.

### **Increase in US sequestration research planned**

The US\$23.6 billion spending plan for the 2007 fiscal year submitted to the US Congress by the Department of Energy (DoE) includes \$100M for research into CO<sub>2</sub> sequestration, an increase of 55%. The DoE said the programme would lay the foundation for expediting the start of projects involving large scale CO<sub>2</sub> injection field tests.

### **FutureGen moves to next phase**

The US DoE has authorised the next phase of the FutureGen project, which includes conceptual and preliminary designs and final site selection. This phase is valued at US\$42.5M, with the DoE contributing \$31.5M. Increased costs have brought the total estimated cost of the FutureGen project to \$1.7 billion, up from an originally estimated \$950M. FutureGen is an initiative to build the world's first integrated sequestration and hydrogen production research power plant.

### **Sequestration atlas for US and Canada**

The US DoE's Regional Carbon Sequestration Partnerships have identified stationary sources of more than 3.8 billion tonnes of CO<sub>2</sub> a year in the US and Canada, and companion candidate storage capacity for more than 3,500 billion tonnes. The results are detailed in the new Carbon Sequestration Atlas of the US and Canada which is now available online. The atlas provides maps and information at both national and regional levels on CO<sub>2</sub> stationary emission sites, geological formations suitable for sequestration and estimates of their storage capacity.

### **American Electric announces capture and storage projects**

American Electric Power has announced plans to capture and geologically sequester CO<sub>2</sub> from two coal fired power plants. It will first install a small scale post-combustion capture validation plant in West Virginia to be followed by a commercial scale system on a 450MW coal fired plant in Oklahoma. The commercial scale system is scheduled to be operational in late 2011, capturing about 1.5M tonnes of CO<sub>2</sub> a year and using it for enhanced oil recovery. AEP has also signed an agreement for an oxy-coal pilot demonstration, to be followed by a study of the feasibility of retrofitting this technology to another of its generation plants.

### **DoE okays Florida low emission coal fired plant**

A 285MW IGCC coal fired power plant got the green light recently from the US DoE to be built at an existing power station site near Orlando. The US\$569M Stanton Energy Center plant is due to come on line in 2010 and federal taxpayers will pay 41% of the cost. Federal funds for the plant are part of President Bush's plan to spend \$2 billion over 10 years to "deliver innovative technologies to improve the environmental performance of new and existing coal fired power plants," according to the DoE.

DoE said the transport gasifier technology to be demonstrated at the plant is unique among coal gasification technologies in that it cost effectively uses low rank coals, as well as coals with a high moisture or high ash content. The new Stanton plant will employ transport integrated gasification technology developed by Southern Co. and KBR

that uses subbituminous or lignite coal, which makes up about half of the proven US and worldwide coal reserves. Stanton already has two bituminous coal fired generation units.

### **Study of UK coalbed storage**

Composite Energy, a Scottish company developing coalbed methane production in the United Kingdom, has commissioned a two year study to evaluate CO<sub>2</sub> storage in coal. The £300,000 project, financed by BG Group, Scottish Power, and Royal Bank of Scotland, will focus on the potential of enhancing methane recovery through injecting and storing CO<sub>2</sub> in coal.

### **CO<sub>2</sub> capture test begins at German pilot plant**

Europe's leading energy utility, Vattenfall, has begun test runs of a new technology aimed at capturing CO<sub>2</sub> at power plants. A pilot plant went into operation in April in eastern Germany where lignite mining and burning is the primary source of energy production. The 1600MW Jämschwalde power plant uses more than 80,000 tonnes of lignite every day, making it Germany's largest single emitter of greenhouse gases.

Vattenfall has spent 50M euros on the new 50MW plant. The plant uses oxyfuel combustion technology which burns lignite in pure oxygen rather than air. The company has yet to find proper storage facilities for the captured CO<sub>2</sub>, but claims that this should not be a problem as exhausted natural gas deposits are well suited for that.

If the trial runs at the Jämschwalde pilot plant turn out to be successful, Vattenfall plans to set up a bigger, 300MW project by 2015. The first commercial CO<sub>2</sub> emission free lignite plant is then likely to go into operation by 2020.

### **Positive screening study for coal-to-liquids methanol plant**

QGX Ltd announced it has received a positive screening study regarding the potential development of a coal-to-liquids (CTL) methanol plant associated with its Baruun Naran coal resource in southern Mongolia. The study was prepared independently by Nexant, Inc. of San Francisco, California. The CTL plant is being evaluated as part of a review to maximise the value of the thermal coal that will be mined with the coking coal at Baruun Naran.

Highlights from the study include:

- Coal at Baruun Naran is amenable to gasification and the production of methanol and methanol-derived products such as dimethyl ether (DME) and olefins, the feedstock for polyethylene and other petrochemicals.
- Run-of-mine (ROM) coal from Baruun Naran, if blended to provide an even-ash feed is suitable for the operation, thereby mitigating the need for a wash plant.
- The study envisions a CTL plant with a capacity of 1.78M tonnes per annum (Mtpa) of methanol, ranking as one of Asia's largest coal-to-methanol plants. Development would consist of a phased approach with an initial start-up plant at one-third the size.
- The 1.78Mtpa CTL plant requires feedstock of 3.3Mtpa ROM coal over a 30-year CTL plant life from the adjacent coal resource at Baruun Naran, owned 100% by QGX. The current resource more than adequately provides sufficient coal to meet the plant's annual coal requirements for a period in excess of 30 years.

### **Picking a winner in clean coal technology**

A new MIT study "The Future of Coal" says that technologies for cleaning up coal as one of the cheapest sources of electricity are promising but no single technology is the solution to economically cutting CO<sub>2</sub> emissions from coal.

The report reached the surprising conclusion that integrated gasification combined cycle (IGCC), may not provide the best solution for reducing CO<sub>2</sub> emissions. IGCC has long been lauded as a type of plant that would make it less expensive to capture CO<sub>2</sub> in the future because it produces more concentrated CO<sub>2</sub> than is emitted from conventional coal plants.

MIT researchers say the key issue is that not all coal is the same. There are many different types of coal, not only in the United States, but around the world and these will suggest different carbon-capture schemes and different technologies.

The MIT study recommends the US government should help fund up to five demonstration projects that geologically sequester CO<sub>2</sub>. The projects would help the power industry begin to understand which geological formations are best for storage. "If we don't have carbon capture and sequestration, coal has a very bleak future," according to Professor John Deutch, one of the co-authors of the study.

### **European legislation and coal**

Coal fired power stations in European Union (EU) Member States are required to comply with a myriad of environmental legislation. Among these are the EU revised (2001) Large Combustion Plants Directive (LCPD) and the EU Emissions Trading Scheme (ETS). The revised LCPD sets new emission limits for sulphur dioxide (SO<sub>2</sub>), nitrogen

oxides (NO<sub>x</sub>) as well as emissions of particulate matter (PM), fine and coarse, for all power plants with a thermal capacity >50MW. The new limits apply from 1 January 2008.

The revised LCPD is considered a key factor driving the current environmental equipment market in Europe.

Options to comply with the revised LCPD include reducing output (by choosing to opt out of the LCPD and operating no more than 20,000 hours between 1 January 2008 and 31 December 2016), switching to low sulphur fuels, retrofitting pollution reduction equipment such as flue gas desulphurisation for SO<sub>2</sub> control, selective catalytic or non-catalytic reduction systems for NO<sub>x</sub> reduction and upgrading electrostatic precipitators or installing fabric filters or shutting the plant down altogether as a final option.

In addition to the revised LCPD requirements, all coal fired combustion facilities with a capacity >20MW have to take part in the ETS which began in 2005. Under the ETS, large industrial plants in the EU exceeding individual CO<sub>2</sub> emission targets can buy allowances from those that do not. The scheme was set up to minimise the economic costs of the EU's Kyoto commitment on combatting climate change.

In January 2007, the European Commission envisaged a two stage strategy for sustainable power generation from fossil fuels. In the first stage to 2020, the main element of an EU strategy will be to use the most efficient coal conversion processes when replacing or renovating coal fired power plants. Furthermore, new plants built in this period should be designed as 'capture ready', which is prepared for later addition of CCS technologies.

A stable, consistent policy and regulatory framework removing barriers to implementation of CCS is crucial for the commercial roll-out of sustainable fossil fuel technologies. In the strategy for the period after 2020, if needed, the Commission declares that it may consider proposing appropriate measures to encourage wide penetration of 'Sustainable Coal'. These could entail a range of initiatives including:

1. extending the horizon of the ETS to match or surpass the usual lifetime of an investment in power generation;
2. identifying and developing CO<sub>2</sub> storage sites and pipelines;
3. favouring sustainable electricity production;
4. implementing timed phasing out of high CO<sub>2</sub> emitting installations.

The Commission believes that after 2020, based on the information available today, all new power plants using coal (and most likely gas as well) should be built and operated with CCS, whereas capture ready plants built in the previous period should be rapidly retrofitted with the technology.

## EVENTS

**15-17 May 2007**, 3rd international conference on clean coal technologies for our future, Cagliari, Sardinia, Italy, Consulcongress Srl, Via San Benedetto, 88-09129 Cagliari, Italy, Tel: +39 070 499242, Fax: +39 070 485402, Email: info@cct2007.it , Internet: www.cct2007.it

**20-23 May 2007**, 6th Asia-Pacific conference on combustion:ASPACC07, Nagoya, Japan, Prof. Akira Umemura, 6th Asia-Pacific Conference on Combustion , Department of Aerospace Engineering, Nagoya University, Furo-cho, Chikusa, Nagoya, 464-8603, Japan, Tel: +82 52 789 4404, Fax: +82 52 789 3280, Email: aspacc07@combustionsociety.jp, Internet: www.combustionsociety.jp/aspacc07/

**21-25 May 2007**, 2007 international coalbed methane symposium, Tuscaloosa, AL , USA, The 2007 International CBM Symposium, College of Continuing Studies, The University of Alabama, Box 870388, Tuscaloosa, AL 35487-0388, USA, Fax: +1 205 348 9276, Email: nhodo@ccs.ua.edu, Internet: www.coalbed.ua.edu

**10-15 Jun 2007**, 32nd international technical conference on coal utilization & fuel systems, Clearwater, FL, USA , Barbara A. Sakkestad, Coal Technology Association, 601 Suffield Drive, Gaithersburg, MD 20878, USA, Tel: +1 301 294 6080, Fax: +1 301 294 7480, Email: BarbaraSak@aol.com, Internet: www.coaltechnologies.com

**28-31 Aug 2007**, International conference on coal science and technology: ICCS&T, Nottingham, UK, Prof. Colin E. Snape, Nottingham Fuel & Energy Centre, University of Nottingham, University Park, Nottingham NG7 2RD, UK, Tel: +44 115 951 4166, Fax: +44 115 951 4115, Email: Colin.snape@nottingham.ac.uk

**10-14 September 2007**, 24<sup>th</sup> Annual International Pittsburgh Coal Conference will be held in Johannesburg, South Africa. Email: pitt2007@sasol.com, Internet: www.sacoalprep.co.za/events.htm

**4-5 Oct 2007**, 2nd international symposium on capture and geological storage of CO<sub>2</sub>, Paris, France, François Kalaydjian, IFP - Communication Division, 1 & 4, avenue de Bois-Préau, 92852 Rueil-Malmaison Cedex, France, Tel: +33 1 4752 6440, Fax: +33 1 4752 7049, Email: francois.kalaydjian@ifp.fr, Internet: www.co2symposium.com

**9-15 Nov 2007**, World energy congress, Rome, Italy, , Mike Treacher, PennWell UK Office, PennWell House, Horseshoe Hill, Upshire Essex EN9 3SR, UK, Tel: +44 1992 656 636, Fax: +44 1992 656 700, Email: [miket@pennwell.com](mailto:miket@pennwell.com) , Internet: [www.rome2007.it](http://www.rome2007.it)

**16-20 Nov 2008**, 9th international conference on greenhouse gas control technologies, Washington, DC, USA, John Gale, IEA Greenhouse Gas R&D Programme, Orchard Business Centre, Stoke Orchard, CheltenhamGL52 7RZ, UK, Tel: +44 1242 680753, Fax: +44 1242 680758, Email: [johng@ieaghg.org](mailto:johng@ieaghg.org), Internet: [mit.edu/ghgt9](http://mit.edu/ghgt9)

#### FEEDBACK

*This e-Newsletter is published for the Coal Association of New Zealand Inc. by CRL Energy Ltd.  
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