

Coal e-Newsletter

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COAL NEWS

NEW ZEALAND

Cost targets set for CO₂ capture and storage

Dr John Topper from the International Energy Agency's Clean Coal Centre addressed a recent Coal Association seminar in Wellington on CO₂ capture and storage (CCS). He said the technology is now "right at the top of the policy agenda" whereas seven years ago it was just an academic exercise. "There is a growing consensus that if we are to stabilise atmospheric concentrations of CO₂, we will need a whole suite of technologies, including renewables and carbon capture and storage." Recent research showed it was not yet possible to pick a winning technology for capturing CO₂. Several were likely to be used and all would need to become cheaper and more efficient before they were used on a commercial scale. There was a need to get commercial scale plants running over the next 10 years in order to advance the technology and drive costs down. He pointed to the dramatic reduction in the cost of a similar technology, sulphur dioxide scrubbing, which now costs about 25% of what it did in the 1970s.

Solid Energy receives go-ahead for Cypress Mine

In a 130 page decision, the Environment Court has granted Solid Energy resource consents for the planned Cypress Opencast Mine, north of Westport. Solid Energy said this is good news for the company and for the Buller and it will take some time to work through the details of the Court's decision. Solid Energy stated it would stand by its commitment to develop and operate this new mine using environmental best practice. In particular the impacts of mining would be minimised on the indigenous flora and fauna, notably management plans for the Great Spotted Kiwi and a species of land snail by creating a predator proof reserve of some 17 hectares and an extensive predator control programme in a wider area.

Solid Energy expects to start developing the new mine later this year and for coal extraction to commence in late 2006. About 5 million tonnes of coal will be progressively mined at Cypress over approximately 10 years in two opencast pit covering 105 hectares.

A further 155 hectares will be used for overburden disposal, roads, water treatment facilities and associated infrastructure. Vegetation and soils will be stockpiled at the start of mining for use in progressive rehabilitation of the site and for final rehabilitation and monitoring at the end of mine life.

Plan to capture Huntly's CO₂ emissions

A project to capture CO₂ emissions from the Huntly Power Station and store them underground is to begin within the next 12 months. A consortium of Genesis Energy, Solid Energy and Geological and Nuclear Sciences (GNS) will attach a ceramic filter to one of the flue gas stacks to extract CO₂ once the right material has been found. GNS said the device will "suck out" CO₂ and liquefy it under pressure to be pumped into an underground reservoir – possibly a depleted gas reservoir, although a site has not been finalised.

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The carbon capture technology is at present high cost (\$40-\$50 per tonne of CO₂) but GNS predicts with research momentum building the cost will fall rapidly during the next 5 to 10 years, by which time it will be a commercially viable option for coal fired electricity generation.

Coast towns vie for coal trade

Greymouth leaders are worried Westport will steal a march on their town in the race to sign up shipping trade with the Pike River Coal Company (PRCC). The Grey District Council expects it will cost up to \$56M to rebuild the rundown Port of Greymouth and to provide a new road or rail transport route to the port.

PRCC had recently met the Buller District Council and its contractor, Buller Port Services, but declined any further comment for commercial reasons. The Greymouth port and transport upgrade will be needed if the town is to cope with a projected surge in coal shipments from less than 100,000 tonnes a year now to 3.8M tonnes within 5 years.

The increase is because of expansion of the Roa and Spring Creek mines and development of the Pike River mine near Ikamatua. PRCC, which expects annual exports of 1.3M tonnes, is undecided on whether to send its coal through Greymouth or Westport, or by train to Lyttelton.

Pike River Coal plans to list on share market

The Pike River Coal Company plans to float shares on the New Zealand stock exchange to finance its export coking coal mine on the West Coast, making Pike River the only New Zealand listed coal company.

Wellington-based New Zealand Oil & Gas Ltd (NZOG) currently owns 71% of PRCC. NZOG said in its half year report to 31 December 2004, that it intends to independently finance the Pike River development north of Greymouth by a separate listing of PRCC.

The NZOG report said that it is currently intended to list PRCC separately through a public offer in 2005, to which NZOG shareholders would be given a priority right to subscribe. The report also said a final investment decision on the Pike River coal project is scheduled for June 2005. This will take place following contracting of key infrastructural components, such as the access road, tunnel, mine dewatering complex and the transport chain. The total mine development costs are estimated at NZ\$70M, this amount being subject to the final development plan. A further NZ\$14M will be required for working capital.

Exploration permit granted for Roxburgh lignite prospect

Solid Energy has been granted an exploration permit for lignite over a 282 ha area near Roxburgh in Central Otago. The permit is on the eastern side of the Clutha river directly north of Roxburgh and covers three separate areas of the Roxburgh Coalfield.

The New Zealand Coal Resources Survey in the 1970's and 80's referred to the Roxburgh East block as highly prospective containing individual seams up to 40 m thick.

The work programme (included in the permit document) requires the permit holder to conduct mapping, sampling, scout drilling, coal analysis and construction of a geological model within 24 months. Within 36 months the permit holder is required to carry out a programme of infill drilling, calculate coal resource estimates and commence pre-feasibility mining studies.

Inquiry into cause of mine subsidence

Investigations are under way into the cause of recent subsidence and slips above Solid Energy's Spring Creek underground coalmine near Runanga. West Coast Regional Council said it was unclear whether they were due to historic mining, the current mine, natural events or a combination of factors.

Production has been suspended since November while the mine plan is reviewed. Solid Energy said it was putting considerable time and resources into monitoring the subsidence. Buffers of vegetation between creeks and the area vulnerable to slips should prevent adverse effects on waterways. Solid Energy also intended leaving "buffer" seams of coal to help stabilise the ground and reduce the chance of spontaneous combustion.

Queensland company invests in West Coast coal

A Queensland-based energy company Eastern Corporation Ltd has bought into a West Coast South Island coal permit and has signed an option to buy the nearby Cascade coal mine.

Eastern Corporation completed acquisition of shares in Restpine Pty Ltd, another Brisbane based company, which held the Whareatea West coal permit near Westport. The 816 hectare permit was issued in December 2002 and its work programme calls for detailed drilling, resource modeling, geotechnical investigations and development of a mining scheme by the end of 2007.

Eastern announced that it had also entered into a 90 day option to purchase the shares in Cascade Mining Ltd, a small coal mine operation nearby. The 90 day option would allow for financial and technical due diligence during which a drilling programme would be undertaken to determine the full extent of the Cascade coal resource and its quality. The open cut Cascade operation produces low ash low sulphur coal, most of which is sold to the Holcim cement works at Cape Foulwind.

Solid Energy to lift Stockton ropeway coal carrying capacity

Solid Energy expects to increase production from its Stockton coking coal mine by installing new lightweight steel boxes on its aerial ropeway. The new lighter boxes would increase annual capacity of the ropeway from 2.0 to 2.3M tonnes.

Solid Energy has awarded a \$2.7 million contract to Brightwater Engineering of Nelson to build the new coal boxes. Currently each bucket on the 2.2 km aerial ropeway carries 1.4 tonnes of coal. The new lighter boxes will be able to carry up to 1.7 tonnes.

West Coast coal output grows 7% in 2004

The recently published 2004 New Zealand coal production figures showed that output from coal mines on the West Coast of the South Island has grown by 7% to 2.6M tonnes from 2.4M tonnes the previous year. However national coal production was almost static at 5.15M tonnes, 30,000 tonnes less than in 2003.

North Island production, which is all from the Waikato area, declined to 2M tonnes in 2004 from 2.3M tonnes in 2003. Coal production from Southland sub-bituminous mines increased substantially in 2004. Otago and Canterbury production in 2004, although small, also increased significantly compared to the 2003 year.

INTERNATIONAL**NSW plans to expand coal fired generation (Australia)**

The NSW Government is preparing to approve the extension of a coal fired electricity plant near Lithgow and has cleared the way for more coal power stations. Electricity consumption is forecast to grow at 2.2% a year, with peak demand growing by 2.9% a year. By 2014, 20% of generating capacity will be needed for just 1% of the time (less than 100 hours a year) with air-conditioning responsible for more than half of the peak load growth. The first stage of the plan is to upgrade the existing power plants, which would yield an extra 300-400MW - enough to address a year or two of demand growth.

Coal suppliers stressed (Australia)

Supplies have been further stressed by intractable shipping delays at Dalrymple Bay in Queensland, Australia. The number of ships waiting to load increased to more than 50 during March. It is not clear whether that confirms worsening delays in loading or simply the fact that customers are sending empty ships earlier to get better queue positions. The port at Dalrymple Bay receives coal by train from mines in central Queensland and ships metallurgical coal, principally to Asian ports. Nearly 5% of all global coking coal trade is handled through Dalrymple. The current port capacity of 53.6M tonnes per annum should increase to 60M tpa by January 2006 under ongoing improvements.

Coal producers told to fire up their publicity machine (Australia)

The Australian coal industry has been urged to correct the public perception it is an unrepentant greenhouse polluter and explain to consumers the grim realities of the life they would face without a

dependable coal-fired power source. Resources Minister Ian Macfarlane berated the industry at its annual conference in April for allowing the debate over the nation's future energy supply to be hijacked by a "green media machine". More on:

http://www.theaustralian.news.com.au/common/story_page/0,5744,12778014%5E30417,00.html

New mine for Gloucester (Australia)

Gloucester Coal will produce 500,000 ROM tonnes from a new continuous miner operation by the end of 2006, if the mine is proven viable. The Australian coal miner has been given the green light for a feasibility study for a Duralie underground mine East and North of its Duralie open cut operation. The new mine and exploration is aimed at doubling existing mineable reserves and extending the life of the company's operations towards 2020.

Rio Tinto's coal sales capped (Australia)

Rio Tinto expects coal prices to stay strong for at least 2 years, but its coal sales are capped by slow transportation in Australia. China would remain a key growth driver for the firm's coal business. However, it was not considering investments in China (such as buying a coal mine) since the sector was near the peak of its price cycle.

Rio Tinto, the world's second-largest mining group, has no coal mines in China. The company said prices for coking coal, used in the steel industry, would stay strong for a longer period than thermal coal, used for power generation. They added that there had been signals that the strength in thermal coal prices would last longer than forecasts for a significant drop in 12 or 18 months.

Coal prices concluded (Canada)

Western Canadian Coal Corp. announced that coal price negotiations with the north Asian steel mills have concluded with settlement prices for the Company's low volatile pulverized coal injection (LV-PCI) coal for the contract year commencing 1 April 2005 in excess of US\$100/tonne. These settlements reflect current international coal market prices for premium quality LV-PCI coal.

In addition, the Company's 6-year contract for delivery to POSCO of 2.8M tonnes of coal has now been confirmed following the successful trial shipments of LV-PCI coal in the first quarter of this year.

Crown Mountain (Canada)

Cline Mining Corporation has applied to the British Columbia Government for three Coal Licences under the Mines & Energy Act covering a total of 777 hectares of the Crown Mountain coal deposit in the Crows Nest Pass Coalfield in Southeastern B.C. The coal is a medium volatile metallurgical type coal for steelmaking applications.

Three coal seams have been identified within the Crown Mountain deposit ranging in total aggregate thickness between 14.4m to 30.1m. The coal seams at Crown Mountain are found in strata which host all current production in the region. Important quality characteristics of Crown Mountain reported by government include volatile matter at 20.8-23.6%; ash content at 17.5-19.5% and sulphur at 0.23-0.26%.

Foster Wheeler/Huanqiu JV awarded coal-to-liquids study contract (China)

Foster Wheeler Ltd. announced that its UK subsidiary, Foster Wheeler Energy Limited, in a joint venture with China Huanqiu Contracting & Engineering Corp., has been awarded a feasibility study Stage I contract by Sasol Synfuels International (Proprietary) Limited (Sasol) and its three Chinese partner companies.

The contract is related to two 80,000 barrels per day coal-to-liquids (CTL) facilities to be located at Ningxia Autonomous Region and Shaanxi Province, respectively, both in the coal-rich western part of the People's Republic of China. Coal-to-liquids comprises an integrated process for the conversion of coal into selected fuel products such as diesel, naphtha and liquefied petroleum gas by using a combination of three principal processes, i.e., gasification of coal to synthesis gas, conversion of gas-to-liquids and hydrocracking the converted products into fuel products. The three processes will involve separate technologies, central to which is Sasol's low-temperature Fischer-Tropsch technology for the conversion of synthesis gas to liquid fuels.

Overseas investors eye nation's coal sector (China)

The Chinese Government is consolidating the coal industry to alleviate the acute coal supply shortfall. Beijing is fostering a score of coal mining conglomerates, including Shenhua Group and Hong Kong-listed Yanzhou Coal, by encouraging them to acquire thousands of small, inefficient collieries. The restructuring of China's fragmented coal industry has inspired foreign investors to make a foray into the key State-dominated sector.

Chinese coal companies have realised the importance of forging partnerships with foreign investors to improve management, technological and financing capabilities, in a bid to gain a competitive footing in the international market.

Coal supplies 70% of China's energy consumption, but the industry is hampered by its small-scale firms. The 10 largest coal companies make up less than 15% of the nation's total production.

Mitsui considers coal mine development (Mongolia)

Mitsui & Co has begun feasibility studies on a project to develop a Mongolian coal mine which is said to have one of the largest deposits in the world. The company will decide in June whether to participate in a joint development project with Canada's Ivanhoe Mines Ltd, which holds the right to exploit the mine.

UK Coal announce losses (UK)

UK Coal claimed to be on course for a return to profitability in 2006 - after blaming operational problems, workforce disputes and geological ill-fortune for a disastrous performance in 2004.

Figures showed pre-tax losses deepened to £51.6M, from a loss of £1.2M in 2003. Deep-mine output slipped to 12M tonnes from 2003's 15M tonnes, while surface mine output was down to 2M tonnes from the previous year's 3M tonnes.

Disrupted production from eastern US mines (USA)

Consol Energy Incorporated has declared force majeure on coal shipments from the Buchanan mine, which has been shut down since February 14 due to a fire. Consol believes the fire is out but CO₂ and other inert gases continue to be pumped in to put out any residual fires. The Buchanan mine outage is affecting deliveries of needed low-volatile metallurgical coal.

High-volatile coal supplies have also been reduced due to Maple Creek Mining's permanent closure of its High Quality mine in Pennsylvania. The company blames poor mining conditions and stringent state regulatory actions that prohibit the use of longwall mining.

However there has also been good news in this coal region. Consol increased its calculated coal reserves in two areas of West Virginia by 320M tonnes to 4080M tonnes for the area, based on use of new, state-of-the-art geologic modeling and reserve evaluation software. Consol intends to continue the reevaluation process for other Consol reserve holdings.

TECHNOLOGY**Road mapping Coal's Future - New brochure from the IEA's Working Party on Fossil Fuels & Coal Industry Advisory Board**

Worldwide, the use of coal as an energy source remains crucial to the economies of many developed and developing countries. As industrialisation and urbanisation spread and national energy requirements soar, coal looks set to retain its position as a secure, reliable source of energy, particularly for the generation of electricity.

Coal-fired power generation accounts for 39% of the world's total electricity production and in some countries, such as the USA, Germany, Poland, Australia, South Africa, China and India, it is very much higher due to its cost competitiveness. While use in some European countries remains static or is in decline, significant increases in coal fired generation capacity are taking place in many of the developing nations, such as China and India, where large capacity increases are planned to make use of abundant coal reserves. Coal fired power plants have a long working life and, with the extensive investments being made in many parts of the world, coal is likely to remain an important source of energy well into this century. In many countries, policies to increase the diversity of energy supplies

are being promoted to improve security within truly competitive energy markets. In this respect, coal has an important role to play – providing coal users are able to respond positively to the environmental challenges associated with the use of fossil fuels.

Fundamentals of pulverised coal combustion (CCC/95)

This report updates the 1986 review on the topic from IEA Clean Coal Centre. It addresses the processes and their underlying mechanisms involved in pulverised coal combustion namely: drying and heating, devolatilisation, volatile oxidation and char oxidation. Pollutant formation during combustion is also reviewed. How these processes may be affected by coal properties and combustion conditions is discussed. Finally, the areas where further research may be required are identified. Although the report only addresses pulverised coal combustion, many of the processes and mechanisms are relevant to fluidised bed combustion and to other solid fuels.

Good News from Coal – Summaries of case studies from World Coal Institute

1. Partnership with a Future: Coal and Bagasse Dual-Fired Belle Vue Power Plant in Mauritius

Dual fuel bagasse-coal electric power plants, such as Belle Vue in Mauritius, create significant opportunities to optimise use of locally available renewable bagasse resources. The successful bagasse and coal partnership at Belle Vue generates environmentally-friendly electricity to the community with a reduced net greenhouse gas impact.

2. Reduced Environmental Impact from New Lignite-Fired Schwarze Pumpe Power Station in Germany

A showcase for the new generation of advanced lignite-fired plant supplying reliable and economic electricity while minimising environmental impact. Schwarze Pumpe, the world's largest supercritical lignite-fired steam power station, is a clear example of new coal replacing old coal with significant improvements in efficiency and emissions performance, through reduced SO₂, NO_x, dust and CO₂.

3. Major GHG Emission Savings at Moura Coal Mine Seamgas Operation in Australia

A pioneer in the coal mining field, Moura Mine is the first operation in Queensland to establish a commercial seamgas business alongside its coal mining operations. The full potential of the mine as a producer of raw materials for energy generation, while simultaneously reducing greenhouse gas emissions and improving the safety of future coal mining operations, is now being realised.

4. Environmentally-Friendly CHP Unit at RJB's Monckton Cokeworks in the UK

At RJB Mining's Monckton Cokeworks in Yorkshire an 11 MWe Combined Heat and Power plant has been successfully developed as part of a major environmental site upgrade. The CHP Plant has added value to what was once a waste gas stream, securing the future of the Monckton Cokeworks and bringing commercial and, most importantly, environmental benefits to the local community, as well as reducing GHG emissions.

5. Utilisation of Coal Combustion Products in Europe

Utilisation of coal combustion products (CCPs) is continually expanding: landfills, agricultural applications, mine and quarry reclamation, road construction, cement replacement/ enhancement in concrete and gypsum products. CCPs are used as a replacement for naturally occurring resources and offer environmental benefits by avoiding the need to quarry or mine these resources. CCPs also reduce energy demand as well as emissions to atmosphere (including CO₂), which result from the manufacturing processes of the products that are replaced.

6. Rehabilitation of TES 3 Coal-Fired Power & District Heating Plant in Mongolia

TES 3 is a power and district heating resource of strategic importance to Ulan Bator. The successfully rehabilitated units, with higher efficiency and reduced emissions, are now the main power and steam resources for the plant due to their low failure rates and higher reliability and efficiency than the other units. The local community relies on the energy available from the plant, particularly the supply of district heating, to help combat and endure the harsh Mongolian winters with their long periods of sub-zero temperatures.

7. CO₂ from US Coal Gasification Plant is Stored in Canadian Oil Field

A CO₂-rich waste gas stream from the coal gasification process at the Great Plains Synfuels Plant in North Dakota is the source of CO₂ for an innovative enhanced oil recovery (EOR) project at the

Weyburn oil field in Saskatchewan. The CO₂ 'miscible flood' EOR project will increase the Weyburn field's oil recovery - and is environmentally-friendly, through the storage of CO₂.

8. Poland's 'New' Coal-Fired Turów Power Station: A Showcase for Today, a Model for Tomorrow

Repowering of Turów Coal-Fired Power Station in Poland with state-of-the-art engineering and technology demonstrates the significant environmental benefits to be gained from increasing efficiency and upgrading coal-fired power plants to current commercially-available standards. The Turów plant is located in the border region of Germany, Czech Republic and Poland known as the Black Triangle, reflecting decades of uncontrolled coal burning with old, outdated equipment creating one of the most polluted air basins in Europe.

9. Australia's Appin Tower Coal Bed Methane Power Project Generates Electricity and Safety

The Appin Tower Power Project based in New South Wales, Australia, is a significant environmental success and world leader in the control and use of methane emissions from coal mines. By utilising methane that would otherwise be vented to the atmosphere, this project demonstrates an innovative approach to reducing greenhouse gas emissions and minimising the safety risk from high methane emissions during mining.

10. Mladá Boleslav's New Coal-Fired CHP Plant in the Czech Republic achieves Operational and Environmental Success

With modernisation through fuel conversion and use of state-of-the-art energy-efficient technology, the new 300 MWth coal-fired cogeneration power plant in Northern Bohemia provides a reliable and environmentally-friendly supply of power and heat to the VW-owned Skoda car factory and district heat to the town of Mladá Boleslav – with significant energy savings and emissions reductions.

The World Coal Institute concludes that coal plays an integral role in global energy and industry...

- 26% of primary energy needs worldwide are met by coal
- 36% of global electricity is generated from coal
- 70% of global steel production depends on coal

Coal is an abundant, safe, secure and competitive energy source. Coal is getting cleaner... and meeting expectations. It is not the use of coal, but how the coal is used that must be the focus for action.

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