Coal Association of New Zealand

Coal e-Newsletter

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What's news?

COAL NEWS

New Zealand

Coal production underway again

Pike River Coal has restored ventilation to its mine following a rockfall which blocked the vertical main ventilation shaft. The company put its first heavy coal cutting machine back into action after completion of a 'slimline' ventilation hole to bring air 100m underground. This provides a strong air flow from the surface to the pit bottom for miners and machines to vent gases and allows for the main production ramp-up of premium hard coking coal to start.

The slimline ventilation hole was reamed through extremely hard rock to 0.6m diameter, lined with steel casing and connected to an underground fan to provide air, whilst the main shaft was fully restored.

The restoration of the main shaft was conducted by a specially-trained mining team from Australia constructing a 2.5m square Alimak raise (an angled bypass round the blocked main ventilation shaft).

The Alimak raise was constructed upwards using explosives to blast approximately 1.2m of rock per day. As the Alimak shaft was created rockbolts and mesh were used to secure the shaft walls and maintain stability. Concrete was also sprayed onto the walls of the Alimak raised shaft to ensure a "life-of-mine" support standard.

Pike River expects US$120/tonne coking coal prices

Pike River Coal Ltd will soon begin producing from its West Coast underground mine. The first export shipment of 60,000 tonnes to Japan is due around mid-November 2009. The company expects prices for its premium coking coal to reach over US$120 per tonne for the next year.

Pike River said that the annual Australia-Japan benchmark price setting for the year ended 31 March 2010 saw premium hard coking coal struck at a healthy US$128/tonne (or about NZ$216/tonne).

Coal production with one of the continuous miner machines has recommenced to allow operation of all three roadway development machines and the in-seam drilling unit to start the ramping-up process, creating the access roadways for large-scale coal production.

Hydro mining is scheduled to start during the October-December 2009 quarter, boosting production to 1 Mtonnes/year. Two hydro monitors (high pressure water cannon) will each cut coal at a rate averaging more than 2,000 tonnes a day.

Solid Energy starts Cypress extension at Stockton Mine

Solid Energy will soon start preliminary works developing the Cypress extension of its Stockton opencast coking coal mine in Buller. The new $60M mining development will add approximately 5M tonnes of high quality coking coal to Stockton's production over 10 years.

The new mining area and associated infrastructure will be built extending Stockton mine's operations to the east into the Upper Waimangaroa Mining Permit area. Solid Energy expects to begin the large scale development work at Cypress in 2010 with the aim of taking first coal from the northern Cypress pit in late 2011.

The preliminary work includes mapping animal populations, predator and weed control, water quality and climate monitoring and biodiversity work. These work streams are required to meet the extensive conditions of the resource consents for the development. A public exclusion zone has been designated covering about 480 hectares (16%) of the 2,932 hectare Upper Waimangaroa Mining Permit area.

Solid Energy believes that by developing new resources, Stockton is capable of producing at around current levels for another 20 years. As well as the Cypress development, the company is investing $100M in a processing plant that will separate 10M tonnes of valuable coal from waste material and is finalising plans to opencast mine the former Millerton Underground Mine inside the Stockton Coal Mining Licence area.

Solid Energy to open up Kimihia opencast mine near Huntly East

Solid Energy intends to develop an opencast pit adjacent to the Huntly East underground mine over the next 6 to 12 months.

The pit is expected to operate on a short-term basis to recover a small amount of coal not mined by the original Kimihia opencast mine between 1942 and 1978.

Kimihia was mined as an underground operation from 1887 through to 1950. The current East Mine is located at the bottom of the old Kimihia opencast pit.

The Huntly East underground mine opened in 1978 and has operated successfully on the eastern side of the town since that time.

Some 50,000 tonnes of coal to be recovered, is located near the boundary of the Huntly East underground mine's licence, close to the alignment of the proposed Waikato expressway.

Solid Energy says coal from the operation will be blended with the underground production and transported by rail from the Huntly East underground mine to New Zealand Steel's Glenbrook steelworks.

Ohai and Terrace Mines to close

Solid Energy recently confirmed it will close Ohai Mine in Western Southland and Terrace Mine in Reefton at the end of June.

Rapidly declining reserves from the current Ohai pit means that the volume of coal bagged for the household market will not meet demand beyond the 2009 winter, instead of being enough to last through the 2010 winter as earlier thought.

The company first signalled the mine would wind down after it lost in 2007 a major contract to supply coal to Fonterra's Clandeboye plant in South Canterbury to Eastern Corporation, which began mining near Nightcaps a few kilometres from Ohai.

Rehabilitation and environmental monitoring will continue at the site for several years. The company said the rehabilitation was designed to allow for resumption of mining if a substantial long term supply contract could be won. To facilitate rehabilitation, Solid Energy hopes to remove about 40,000 tonnes of fines from the site, which may be railed to Lyttelton for export if no local buyers can be found.

The future of Terrace Mine has been under review for some time as the operation struggled to remain viable in the face of increasing production costs. A 2008 review concluded that the then high international coal prices justified continuing production for a further 12 months, however the mine is no longer sustainable in the current market.

The mine has produced about 45,000 tonnes of thermal coal per year, mainly for the South Island industrial market. In recent years mining has reached depths of 230m, involving considerable engineering challenges, which have now become economically prohibitive.

Air quality standards to be reviewed

New Zealand's air quality standards need reviewing to ensure they are practical and achievable, according to Environment Minister Nick Smith. The Minister recently released the terms of reference and technical advisory group for a review of the national environmental standards for particulate air pollution under the Resource Management Act.

"We are at the halfway mark between when the standards were set in 2005 and when they must be complied with by 2013 so it makes good sense to review progress. Air quality is critical to New Zealanders health and our clean green reputation. We are committed to ongoing improvements but want to ensure we have the policy and timetable right.

"We are making good progress in many parts of New Zealand in reducing air pollution but there are 10 cities and towns including Auckland and Christchurch that are unlikely to meet the standards by 2013. The implications for industry and employment are very serious as no renewed or new consents are allowed in air catchments where the standard is not met by 2013. The review needs to look at whether it is fair to solely punish industry for non-compliance when the overwhelming pollution is caused by home fires and, to a lesser degree, vehicles. It will also look at the costs and benefits of the air standard and the optimal timetable for achieving improvements."

INTERNATIONAL NEWS

Australia

Waratah Coal expands mine capacity

Waratah Coal Inc. plans to build a A$7.5 billion venture in Queensland. It has expanded proposed capacity at the mine by 60% as it seeks to build Australia's largest coal project. The company, bought by Mineralogy earlier this year, has increased targeted annual capacity to 40M tonnes from 25M tonnes after assessing the results of test drilling.

Waratah has altered what it calls the "China First Project" after the government blocked its original site for exports of coal from the Galilee Basin deposit on environmental grounds.

The venture will comprise the mine, a 490km rail line and export terminal, with shipments due to start in the second half of 2013. Waratah has amended its plans for the project and now proposes building an export terminal at Abbot Point, Australia's most northerly coal port.

Noble wins control of Gloucester Coal

Noble Group Ltd (Hong Kong) won control of Australia's Gloucester Coal Ltd after raising its cash bid to A$460M for the shares it doesn't own. Noble owns 46.7M shares, or 57.2% of Gloucester. It raised its offer to A$7/share from A$6/share to win the endorsement of Gloucester directors.

Gloucester said it will scrap a proposed agreed merger with Whitehaven Coal Ltd. if the Noble proposal is successful.

Asia coal prices edge up on China, India demand

Australian thermal coal prices, a benchmark for Asia, edged up to A$64/tonne, supported by steady demand from China and India. The Customs data also showed that China's coal imports soared to a record high of 9.2M tonnes in April, up 3.4M from a month earlier and far above market expectations.

The failure of China's coal miners to strike an annual price deal with the country's five big power firms this year and the closure of smaller mines have opened the door to imports.

China

Shenhua Energy earnings up

Shenhua Energy Co posted a 17.2% rise in first-quarter earnings, fuelled by a surge in coal output, but it warned of rising costs in the coming quarters.

China's coal miners have been grappling with weaker prices as slackening industrial activity crimped coal demand in the first quarter. But analysts have turned positive on the sector as coal stocks decline and power demand ticks up in the world's second largest energy user after the USA.

Energy expert sees coal power slowing from 2011

China's boom of coal-fired power plants is likely to slow after next year as excess capacity and then expanding renewable and nuclear energy sources kick in, a senior energy policy analyst said recently.

Jiang Kejun of China's Energy Research Institute said the forecast slowing also reflected longer-term shifts in the country's energy use, as industrial growth slows while transport and household energy consumption expand. "After 2010, the coal power industry will have a very slow growth rate," said Jiang, whose research focuses on how the fast growing nation can limit greenhouse gas emissions while keeping up economic development in coming decades.

"The increase in power generation will mainly come from nuclear and renewable energy and natural gas-fired power plants, so newly installed coal-fired power plants will be very limited after 2010." Slowing expansion of coal power would mark a big shift for China, which has used the low cost fuel to stoke its double-digit growth.

China is likely to install more than 50,000MW of new coal power generation in 2009 and again in 2010, Jiang said. Such growth would be similar to last year, when the country's capacity grew 10.3% to 792,500MW, mostly generated by coal. Chinese coal output has also been rising rapidly, doubling from 1300M tonnes in 2000 to 2720M tonnes last year. China is under pressure to curtail its CO_2 emissions, which scientists say now outpace those of the USA.

Yanzhou Coal sets lower target in 2009

Yanzhou Coal Mining Co. lowered its 2009 sales target to 6.7% below its 2008 sales volume after reporting first quarter profit fell 48.5%, hurt by falling demand and prices.

The Chinese coal producer planned to sell 35M tonnes of coal in 2009, compared with 37.6M tonnes in 2008. Coal for export is estimated to be at 0.5M tonnes for the year, down from 1.8M tonnes in 2008.

However, the company said government measures to stimulate economic growth would lift domestic demand for coal.

China extends gas safety campaign to big coal mines

China's National Development and Reform Commission (the country's top economic planner) has extended a safety campaign to address the hidden dangers of coalbed methane from small mines to medium and large sized coal mines.

The fatal gas explosions in Shanxi's Tunlan mine in February and Chongqing's Tonghua mine in May exposed weaknesses in gas treatment and loopholes in management in medium and large sized coal mines, according to the NDRC. Beijing announced a gas safety campaign in mines with annual production capacity of 300,000 tonnes in April, and has now said mines with higher capacity will also be targeted.

Small mines that do not meet safety standards for gas treatment by September 2010 will be shut down. The campaign aims to prevent gas explosions of high fatality, and increasing the extraction and use of CBM, a largely untapped source of energy.

"By end of 2010, 18 mining areas with annual gas extraction of over 100M cubic metres should be established," the NDRC said in the statement. China said it holds 36,000 billion cubic metres (bcm) in reserves of the gas, the world's third largest after Russia and Canada, but it pumped 5.8 bcm from underground and used only 1.8 bcm.

Inner Mongolia completing four coal prep projects

Inner Mongolia is expected to put four 3M tonne coal preparation projects into operation in Haibowan Area of Wuhai City. Shenhua Wuhai Coal Coking Corp recently started trial operation in its preparation plant. The plant is designed to process 3M tonnes of raw coal annually.

Another two preparation plants, owned by Friendship Clean Coal Co and Desheng Coal Coking Co, also completed construction recently. Inner Mongolia Huanghe Industrial and Trade Group is completing equipment installation and operation is expected to commence in July.

In addition, Yuantong Coal Chemical Industry Co has gained approval from the Wuhai Economic and Trade Committee to start technical innovation for its 3M tonne coal preparation plant.

Indonesia

Indika sees rise in 2009 coal output

Indonesian's PT Indika Energy Tbk expects coal output to rise about 14% to nearly 25M tonnes this year after finalising the acquisition of engineering firm PT Petrosea Tbk.

Coal production at PT Kideco Jaya Agung, in which Indika has a 46% stake, should reach 24M tonnes this year, while Petrosea should add an additional 850,000 tonnes.

Indika Energy agreed to buy an 82% stake in Petrosea from Clough International Singapore Pte Ltd for $84M in February. Petrosea has a 50% stake in local coal miner PT Santan Batubara.

Indika, which produced 22M tonnes of coal in 2008, expects coal production to reach nearly 28M tonnes in 2010, including 26M tonnes produced by Kideco and 2M tonnes by Petrosea.

South Kalimantan gets coal trucks off public roads

A local government in one of Indonesia's top coal producing areas has banned coal and palm oil firms from using public roads because of the damage done by the trucks, a move which could increase costs for smaller producers. The governor of South Kalimantan province, which accounts for around 36% of Indonesia's total coal production, said the new regulation was intended to reduce the damage to key infrastructure and would come into effect in July.

The ban is unlikely to affect shipments from big coal producers in the area -- including PT Adaro Energy Tbk and PT Arutmin, a unit of Indonesia's largest coal producer PT Bumi Resources Tbk as they have their own hauling roads.

Many of the public roads in South Kalimantan have been badly damaged, as they were not intended for heavy use by trucks carrying coal and oil palm fruit and weighing tens of tonnes.

Coal miners and palm oil planters must build their own roads linking the mines and plantations to the nearest river ports by the end of July.

Mozambique

CAMEC says coal resource over 1 billion tonnes

Central African Mining and Exploration Co Plc announced a resource estimate of 1.033 billion tonnes of coal for an exploration licence in Mozambique.

The diversified producer said it has identified eleven coal zones on the licence and that its next step is to conduct a feasibility study to assess the production potential of the project. The company said it is reviewing all options with a view to fully demonstrating the value of its coal assets to the market.

Philippines

Napocor earmarks US$540M for coal supply

National Power Corporation has earmarked as much as US$540M this year for the purchase of its coal requirements.

The company said the bulk of the amount would be used for the coal requirements of the 1,218MW Sual power plant in Pangasinan, 700MW Pagbilao plant in Quezon and the 200MW Naga facility in Cebu.

Napocor's priority for now was to first bid out contracts for the supply and delivery of coal to the Pagbilao and Sual plants, which would require a total of 780,000 tonnes.

Napocor is set to hold three tenders, two of which would be for Sual for 390,000 tonnes of coal and the other for Pagbilao, involving 195,000 tonnes.

San Miguel to bid for Calaca coal power plant

San Miguel Corporation said it is among 11 firms seeking to buy a state owned coal fired power plant after a French company walked away from a US$787 M deal early this year.

San Miguel told the Philippine Stock Exchange it has "expressed interest to bid for the Calaca coal fired power plant."

French power firm Suez Energy, through its vehicle Emerald Energy Corp., had won an October 2007 auction to take over the 600MW plant, located south of Manila. But it pulled out in January, citing a "deterioration in the condition of the Calaca plant."

The government has since said it will dispose of the plant through a "negotiated sale," adding that 11 groups had signalled they would put in bids. Calaca is among the assets owned by the state utility firm that are being sold off as part of a government plan to privatise the power industry.

PNOC-EC to grow coal operations

Philippine National Oil Co-Exploration Corp (PNOC-EC) plans to expand its operations this year to ensure the steady supply of coal and further improve sales performance.

In a regulatory filing, PNOC-EC said it will expand its operations in Zamboanga Sibugay under Coal Operating Contract (COC) 41 by taking over the Integrated Little Baguio area, which was formerly being operated by Taiwan Overseas Mining Co.

It added that it will start developing the Lumbog and Malongon areas in the province.

On top of the Zamboanga coal operations, PNOC-EC said it will also actively pursue this year the areas of Surigao, Isabela and Siay Zamboanga.

PNOC-EC currently serves the requirements of the cement manufacturing and power production industries with its own production, other local mine sources such as Semirara coal and coal imported from Indonesia.

In 2008, the company sold directly as much as 870,000 tonnes of coal, and was able to trade 112,536 tonnes of Indonesian coal to China.

South Africa

Homeland Energy Group receives mining licence for Eloff Coal Project

Homeland Energy Group Ltd announced that it has received formal notification from the South Africa Department of Mining & Energy (DME) that a Mining Right has been approved for Homeland's Eloff Mineral Project (Eloff). At a potential 500,000 tonnes per month run-of-mine (ROM) - the amount for which Eloff will be initially licenced - Homeland will join the ranks of major miners in South Africa.

Homeland is currently in the final stages of completing pre-feasibility work on Eloff through Exxaro Engineers of South Africa. Bankable feasibility work will commence thereafter. As the feasibility studies progress, the company will continue discussions with potential partners on the options for power development on the back of the Eloff Mining Right.

The focus in South Africa on Independent Power Producers (IPP) is increasing as the country's demand for electricity increases. Homeland's largest shareholder, GMR Energy Ltd, has the experience and the energy and infrastructure expertise required to make significant contributions to success of Eloff.

USA

Peabody, White Energy start clean coal project

Peabody Energy and Australia's White Energy Ltd have agreed to develop a coal upgrading plant at Peabody's Powder River Basin site in Wyoming. Peabody also might buy up to a 15% interest in White Energy.

The plant will use White Energy's patented technology to take coal with a lower heating value and increase its overall energy content by about 35%. The resulting coal is cleaner, with lower CO_2 and other emissions.

The first phase of the project is expected to produce more than 1M tonnes of upgraded coal per year, and later phases could up plant capacity to more than 20M tonnes/year. The companies said that they have begun engineering design and permitting activities for the first phase, which are expected to take up to two years.

The new agreement also gives Peabody the first right to participate in new coal upgrading development projects that White Energy undertakes in North America and China.

Coal mine leases would bring wealth to Montana

A recent appraisal of state owned coal reserves in south-eastern Montana finds the state would reap $US1400M in royalty payments over the next four decades if it leases the property for mining. Development of the Otter Creek tracts - more than a billion tonnes of coal co-owned by the state and by Great Northern properties - could open

the door to a dramatic expansion of the region's coal industry. It could facilitate construction of a long delayed rail line, the Tongue River railroad.

Advocates for developing the tracts include private industry and the Montana Rural Education Association, which wants the royalty payments for public schools. The Montana Governor said he wanted a mine built, but only if the state gets good value for its assets. He said any environmental concerns were superseded by the state's obligation to bring in revenues from its land.

TECHNOLOGY & OTHER NEWS

Australian government will invest A$2.4 billion in clean coal

The Australian government announced in its May budget it will invest A$2.4 billion in low emission coal technologies, including funding of $2 billion over nine years for industrial scale CCS projects. The CCS Flagships Program has called for project proposals to build at least two, and up to four, industrial scale CCS projects in Australia.

The funding includes running the Global Carbon Capture and Storage Institute, which is aiming to drive the dissemination of CCS technology and skills around the world. The government says sharing the knowledge generated by the institute's activities will be critical to enable broad deployment of CCS by 2020.

Japan may offer financing for Australian clean coal project

The Japanese government stated in June it will consider a loan for the ZeroGen plant if operator Queensland state requests it. Mitsubishi Heavy Industries and the state government have been in talks about building the project, though no agreement has been reached.

The possible financing is part of a larger plan to offer loans to power producers in the US and Australia that buy clean coal generators from Japan, a senior trade ministry official involved in drafting the plan said on condition of anonymity. The funding could help drive sales of the IGCC plants, costing about US$3 billion apiece, as part of efforts to benefit from growing demand for low emission generators. The official estimated this cost would apply to a 500MW power station employing both IGCC and CCS.

The IGCC plants are made by MHI and Hitachi Ltd and the gasification process is designed to cut emissions of sulphur oxides, particulates and mercury and to increase fuel efficiency. They can also make it easier and cheaper to separate CO_2.

Australia opens bidding for undersea carbon plan

Australia recently opened the bidding for ten offshore areas that will be used to store CO_2. The Energy Minister said the release of greenhouse gas storage areas for commercial development was the world's first and part of the government's strategy to reduce its carbon emissions while maintaining economic growth.

"Advancing storage technology and capacity is vital to the future of Australia's coal industry and to coal's future as part of the world's transition to cleaner energy pathways. It is also important for the oil and gas industry and our energy intensive industries," according to the Minister.

The move to allow companies to pump CO_2 underground would also help pave the way for the development of a multi-billion dollar gas export project proposed by US energy company Chevron. Its proposed A$50 billion Gorgon liquefied natural gas project off Western Australia plans to inject 3M tonnes of CO_2 underground each year, which would be the world's largest CCS project. It would also be Australia's biggest resource development and it recently won conditional environmental approval for a 50% cent expansion. Chevron believes the project would pump an estimated $40 billion worth of royalties and $33 billion worth of goods and services into the national economy over 30 years. Construction of the plant would start in 2010.

CO2CRC developments

The monitoring and verification programme at the CO2CRC Otway Project (in Victoria's south-west) is currently being reviewed by an expert panel led by the IEA Greenhouse Gas R&D Programme (IEA GHG). The panel will be reviewing all the science that has come from the project to date. Their report will be made to the federal Department of Resources, Energy and Tourism, who are major sponsors of the monitoring programme at the site. Additionally their comments will help focus research efforts move into the concluding stages of the first storage demonstration. Project.

The Project's first birthday in April was marked by reaching the milestone of 50,000 tonnes of CO_2 injection. Reference group meetings are held to update landholders and the community on the progress of the project. At one of these meetings, CO2CRC Chief Executive Peter Cook outlined plans under development for a Stage 2 of the

Project. The Stage 2 proposal would involve drilling a new injection well, close to the current injection well, in order to test CO_2 storage for other rock types and better understand their storage potential. The Otway site is a very cost effective platform for further testing as many of the requirements, such as monitoring and verification and a ready source of natural CO_2, are already in place.

Australia's first pre-combustion CO_2 capture research project, the CO2CRC/HRL Mulgrave Capture Project, was officially launched in May at HRL's gasifier research facility in Melbourne. The key objective of the project is to reduce the technical risk and cost of capturing CO_2 from the next generation of coal gasification power stations. Advanced technologies such as IGCC will enable higher thermal efficiencies (up to 50% in the future) through a combined cycle which uses a gas turbine followed by a steam turbine to generate electricity. The project is using three research rigs, each using an innovative new technology, to capture CO_2 from syngas. During the project, researchers will evaluate solvent, membrane and adsorbent technologies for efficiency and cost effectiveness.

The Membrane Society of Australasia was launched at Melbourne's Victoria University in May. The Society includes several CO2CRC capture researchers in its membership and it provides a forum for researchers working in membrane technologies to exchange knowledge and link their activities to industry. Membranes are used for a wide range of purposes, including value adding products in the dairy industry, desalination and removing impurities from food. Membranes often have the advantage of being a low cost, low energy separation technology and that is why they are a focus for capture research. Membranes can be used either as a method of allowing CO_2 to be absorbed from a gas stream into a solvent (membrane gas absorption) or on their own, much like a filter (gas separation membranes). One of the challenges is making them robust enough to withstand the harsh environment of industrial waste gases.

Risk Assessment Network meeting in Melbourne

International Energy Agency Greenhouse Gas R&D Programme (IEA GHG) held its fourth Risk Assessment Network meeting in Melbourne in April to bring together risk experts from industry, government and academia to progress the thinking around key CCS risk assessment issues. Risk assessment is often carried out in the areas of environmental impact assessment, occupational health and safety, insurance and public health. While risk assessment is usually focused on technical risks, CCS operators must also consider political, legal and economic risks.

CO2CRC reported that risk assessment studies can assist the development of monitoring programmes for CCS injection sites, relying on predictions of the long term fate of the injected CO_2 and assessing aspects of the project for proponents and regulators to focus on in both the short and long term. The network meeting provided the opportunity for researchers to discuss a broad range of issues including combining monitoring and verification, modelling and risk assessment processes; risk assessment and insurance; quantification of impacts; risk communication; and updates from real projects. A feature of the meeting was the strong interest by insurance companies, who are now prepared to offer insurance policies for storage projects. This indicates that some companies believe they understand the risks surrounding CCS and are prepared to make commercial decisions based on that knowledge.

DOE revives FutureGen, reversing Bush decision

The Obama Administration gave conditional support in June for a federal-industry partnership that would build an advanced coal burning power plant in Illinois to trap and store CO_2 emissions, reversing a Bush-era decision to abandon the FutureGen project.

The Department of Energy plans to contribute slightly more than $1 billion to the project. after pressure from Illinois lawmakers who had "savaged" the former Energy Secretary's decision to abandon the plan early last year.

Obama's Energy Secretary, Steven Chu, announced in June a "provisional agreement" with the FutureGen Alliance, a consortium of major coal and utility companies such as American Electric Power and Peabody Energy. "This important step forward for FutureGen reflects this Administration's commitment to rapidly developing carbon capture and sequestration technology as part of a comprehensive plan to create jobs, develop clean energy and reduce climate change pollution," Chu said.

DOE said FutureGen would be the first commercial scale, "fully integrated" CCS project in the country. The plant would marry the use of integrated gasification combined cycle (IGCC) technology with greenhouse gas emission controls. Under the deal, several actions will be undertaken through early 2010, such as restarting design work, releasing an updated cost estimate, expanding the private sponsorship group and potentially preparing a new analysis of underground regions where the emissions would be sequestered. A decision about whether to proceed from there would come early next year, DOE said.

FutureGen Alliance said that under the deal, it would work jointly with DOE through the rest of this year on refining the design to reduce costs and "technical risk". "Several technology configurations will be considered and upcoming discussions with equipment vendors, the engineering team and economics will shape the final design of the facility," according to the group.

DOE plans to spend $1.073 billion, all but $73M of which comes from funding for CCS in the economic stimulus law. The industry group would be expected to provide $400-600M, with a goal of having 20 companies kick in $20-30M over four to six years, DOE said. Also, the alliance would seek other non-federal funds to build and operate the plant, including "options for capturing the value of the facility that will remain after conclusion of the research project".

The stimulus law includes $3.4 billion for development of CCS technology and DOE has announced how $2.4 billion of that will be spent. Included in the allocation is $1.52 billion for projects to capture and store CO_2 from industrial sources.

AEP sees CCS from coal ready by 2015

CCS technology for coal fired power plants will be ready by 2015 and could be in wide use in the US by 2020, according to the top executive at American Electric Power Co, one of the largest US utilities (75% of its generation coming from coal fired plants). The executive said his company's work in West Virginia on CCS gave him more insight than sceptics who doubt the technology.

He argued that by 2020, CCS will be available, understood and a technology that works. He said many of his colleagues think that will be 2025 or beyond, but “they all think they will get their nuclear power plants built by 2015 but I don't think they will. Time will tell."

Several utility executives, along with President Obama, say CCS technology must be a key element of energy policy, noting that coal generates half the electricity in the US and that the country has abundant coal resources. US power demand is expected to grow by 20% by 2030.

CCS faces costly hurdles regarding liability

Kinder Morgan Energy Partners LP said in early June that the pipeline giant will not enter the market to store CO_2 in underground reservoirs unless the US government settles who is legally liable if the gas leaks out. The company owns the biggest US pipeline network to transport CO_2 and could easily build more pipelines to allow power plants, refineries and other industrial facilities to pipe captured emissions into underground storage.

Offering to sequester the CO_2 without legal assurances would open companies up to a raft of legal liability, Kinder said. "This is a plaintiff lawyer's dream." The US government must find a way to indemnify companies from being sued for environmental violations if the CO_2 escapes to the surface and causes damage, according to Kinder. The US EPA is expected to finalise a CO_2 sequestration rule that could address the liability issue.

Kinder Morgan's Cortez pipeline moves 1.3 billion cubic feet per day of CO_2 through a 2000km pipeline network from Colorado to Texas where it is injected to boost oil output from older fields.

Mitsubishi to test carbon capture technology at coal plant

Mitsubishi Heavy Industries Ltd and Southern Company will jointly demonstrate a test plant enabling recovery of between 100,000 and 150,000 tonnes of CO_2 annually from an Alabama coal fired power plant. The demonstration, involving the equivalent of emissions from 25MW of the plant's generating capacity, is scheduled to begin operating by the first quarter of 2011.

The application of CO_2 recovery technology to a coal plant flue gas (with its many impurities) will be on a larger scale than has been tried elsewhere. Based on the test results, MHI will pursue the CO_2 recovery/compression technology needed for commercial scale carbon capture.

The MHI carbon capture technology will be installed on an existing unit of the Alabama plant, with the CO_2 captured in the demonstration transported by pipeline and injected underground at a site away from the plant grounds. The DOE Southeast Regional Carbon Sequestration Partnership will be responsible for the transport and sequestration. The Electric Power Research Institute and other partners are participating in the project.

MHI's CO_2 recovery technology is the KM-CDR Process that uses the company's proprietary KS-1 solvent for CO_2 absorption and desorption, which MHI and Kansas Electric Power jointly developed. The process requires lower energy consumption than other technologies and MHI hopes to demonstrate this efficiency will also apply for the level of impurities contained in coal fired flue gas to show that the technology is commercially viable.

GreenGen to build IGCC+CCS power plant in Tianjin

GreenGen announced in Beijing that it would start the construction at the end of June of a coal based power plant in Tianjin City, 150km southeast of Beijing. This pioneer project would be the country's first commercial scale "clean coal" power plant. It will use an IGCC process to gasify coal to extract the hydrogen while sequestering the CO_2 emissions for pumping into oil wells to aid in petroleum recovery. IGCC uses the syngas to drive turbines and generate electricity with far lower emissions than conventional coal plants. For example, mercury and particulate levels are close to those seen at natural gas fired plants.

GreenGen said all engineering and design work has been completed. Major items of plant have been selected and are on order, and site preparation and foundation work is ready. GreenGen's major shareholder is China's largest power producer Huaneng Group. Other than the gas turbine power unit which is to be imported, all components will be domestically produced, including the core feature, a novel gasifier designed by the Thermal Power Research Institute in Xian.

The first phase of the GreenGen plant is expected on line in 2011, generating 250MW from the gasification of 2000 tonnes of coal per day. The project includes three phases for additional generation and capture, expanding to 650MW by 2016 from 3500 tonnes coal/day.

Evergreen Energy clean coal technology gets Chinese approval

The joint venture between Evergreen Energy and China Energy Technology Co has received official approval from China's National Development and Reform Commission (NDRC) for the development of K-Fuel refined coal technology to upgrade China's lignite reserves.

NDRC constantly monitors new technologies and proposed foreign investments and decides whether they will benefit greater China and are worthy of receiving state resources. NDRC approval affords greater intellectual property protection for foreign technologies making their first inroads into China, and it gives licence to state owned entities to move forward with foreign technology joint ventures.

The joint venture and a major state owned Chinese energy entity will now focus on evaluating two proposed K-Fuel plant sites in the Inner Mongolia Autonomous Region. China has billions of tonnes of lignite and sub-bituminous coals. K-Fuel technology can raise the heating value of Inner Mongolian coal by more than 25% while removing significant amounts of mercury and improving the handling and shipping characteristics of the coal.

UK CCS developments

The UK government proposed in June a levy on electricity to fund up to four CCS demonstration projects, which it sees as crucial to reduce greenhouse gas emissions. In launching consultation on a framework for development of clean coal, the Department of Energy & Climate Change (DECC) had suggested the 2011 introduction of the levy on energy suppliers. DECC said it estimated the impact on energy prices would be "very minimum... it will be a maximum of 2% by 2030."

In April, the government announced all new coal fired power generators needed to apply the pioneering CCS technology to about 400MW of the gross plant capacity from the outset and to have the technology fully fitted within five years of it being proven. It also announced it would provide support for up to four projects, instead of just one as in its initial plan. Each demonstration project would have to store 20M tonnes of CO_2 over 10-15 years.

The government planned to support the three additional CCS demonstration projects by virtually setting a floor price for CO_2 emissions abated by them. It proposed a payment based on a contract for differences (CfD) for CO_2 abated by CCS linked to the price of allowances in the EU ETS. DECC currently favour CfD for disbursing funding because it thinks the abatement of CO_2 is "much closer to the market".

In May, energy companies said they will lobby the government for a get-out clause from the deadline to fully fit CCS technology to new coal plants by 2025 because they are worried it might not work in time. They said they want provisions that would allow them to keep the plants open until 2030, or for an additional number of operating hours. The utilities are warning that without firm guarantees, they will not invest in a new generation of cleaner coal plants and that switching off up to 6000MW of coal plants in 2025 if CCS is unworkable by then, would threaten the UK's security of supply. The government said it will plan on the basis that CCS will be technically and economically proven by 2020.

According to research commissioned by the government, developing CCS technology will generate up to 60,000 jobs in fields as diverse as engineering, manufacturing and procurement. 'Future Value of Coal Carbon Abatement Technologies to UK Industry' by AEA Group, suggested that CCS could bring between £2-4 billion into the UK economy every year by 2030, and support between 30,000-60,000 jobs.

Officials have described the government as wanting to experiment with different types of CCS. Of the four new coal stations planned, at least one would be fitted with the pre-combustion capture system. E.ON has drawn up plans for a 400MW pre-combustion plant in Lincolnshire, though there are a number of other candidates. Another station would be fitted for post-combustion, capturing only 20-25% of emissions. The other two plant types are undecided. An official said testing various technologies is the best way of working out the costs of CCS – currently estimated to add £800M to each new coal station. "Britain can lead the global CCS market, but we need to make it cost effective. If we demonstrate different technologies then we have a wider range of expertise to sell to the world."

German coalition agrees scaled down CCS law

Germany's grand coalition government agreed in June to a scaled down draft law on CO_2 storage after conservatives objected to some of the measures. The agreement allows only for individual test sites rather than allowing a more comprehensive framework for CCS across Germany.

The coalition has spent months wrangling over rules to regulate the efforts of utilities such as E.ON, RWE and Vattenfall to test and install the technology early enough for large scale commercial use after 2020. Speedy progress of the law is needed to allow these firms to meet timetables for pilot plants ahead of full commercial production planned for 2020, and to ensure that CO_2 taken from the plants can be piped into suitable stores by that date.

Germany derives 50% of its power from coal but without CCS will not be able to keep this up in coming years, as stringent EU laws aimed at discouraging CO_2 emissions set rising financial penalties on conventional coal burning.

Canada details fund for CCS and clean energy

The Canadian government announced details in May of its C$1 billion (US$860M) clean energy fund, with the lion's share of the cash going to support the development of CCS projects. C$650M has been earmarked to help pay for large scale CCS demonstration projects as the government looks to follow through on agreements made during US President Obama's February visit to Canada. The cash for the fund comes from the two year, C$40 billion economic stimulus plan announced earlier this year in Canada's federal budget.

The Conservative Party government is looking to keep up with US initiatives to stem climate change and to offset criticism of Canada's environmental record and of carbon intensive oil production from the country's oil sands.

Last year the federal government earmarked C$240M to aid plans for a carbon capture program at a power plant in Saskatchewan while the Alberta government has a C$2 billion fund to support CCS programs in that province.

Norway stalls Kaarstoe CO_2 capture project

Norway stalled a project to build a carbon capture facility in Kaarstoe recently because of uncertainty over electricity production levels and CO_2 emissions at the accompanying power plant, according to developer Gassnova. The 425 MW Kaarstoe plant, Norway's first commercial power station fuelled by natural gas, has been idle for much of the past year due to an unfavourable relationship between the price of gas and electricity. The less the power plant works, the higher the unit CCS cost will be.

The Norwegian government said it stopped the procurement process for contracts to construct the CO_2 facilities until it has "a clearer view on the operational pattern" of the Kaarstoe station. The decision means full scale CO_2 capture at Kaarstoe (a US$530M project that will be 10 times bigger than similar US plants) will be delayed beyond its scheduled start in late 2011 or early 2012. Norway has not changed plans for a second CCS facility in Mongstad, another industrial hub on its North Sea coast.

Nuon to start building CO_2 capture test facility

Dutch utility Nuon said in April it would start building a test carbon capture facility at one of its power plants in the Netherlands. Construction at a plant in Buggenum would start before the summer and it would be operational in the second half of 2010.

The trial at Buggenum will take about two years and cost about 40M euros. Nuon said it would be used to gain experience for large scale CO_2 capture at the Magnum power plant it wants to build in the port of Eemshaven. The firm plans to build the multi-fuel plant at the seaport in northeastern Netherlands, but construction has been held up due to problems with permits after environmental groups opposed the project.

Swedish energy group Vattenfall said in February it would buy Nuon's production and supply arm for 10.3 billion euros.

Researchers propose improved Fischer-Tropsch route for US coal conversion to oil

Researchers from the University of North Carolina and Rutgers, the State University of New Jersey, have proposed a two step chemical process for making cleaner burning alternative fuel from coal and other carbon sources. They note that about 2% of the US energy reserves is oil, 3% is gas and 95% is coal. They consider producing diesel fuels from coal is especially attractive since diesel engines are more efficient than gasoline engines.

The Fischer-Tropsch method of making synthetic liquid fuels from coal and other carbon sources has been used since the 1920s. Today, Fischer-Tropsch fuels (termed "green diesel") power most large vehicles in South Africa and American companies have expressed interest in these fuels, which emit fewer particulates and less carbon monoxide than conventional diesel fuels. The cost of making Fischer-Tropsch fuels has been considered prohibitive, but as oil becomes more expensive, the researchers think it will soon become a competitive process to make liquid fuels.

They say the process they have developed allows higher conversion rates to usable diesel fuels, using a dual catalyst system that allows low molecular weight alkanes (4-9 carbons in the chain) to be converted up to a range appropriate for diesel fuel (10-19 carbons). One catalyst removes hydrogen, making the new material more reactive for a second catalyst to "scramble" the carbon bonds, creating compounds with higher molecular weights. The first catalyst then returns the hydrogen atoms to the rearranged compounds, yielding alkanes that are usable as fuel.

Currently, the hydrocracking process is used to break down hydrocarbons with molecular weights too high for fuel use into lower molecular weight materials, but the process is not very selective. The new catalyst system can combine very low molecular weight and very high molecular weight alkanes to produce alkanes in the diesel fuel range and, thus, may also prove useful for recovering value from high molecular weight materials. However, the researchers caution that their investigations are in the early stages, and "considerable improvements in the catalyst systems are required before they become practical."

IGas generates power from UK coal bed methane

Island Gas Resources Plc (IGas) has succeeded in generating power from coal bed methane for the first time in Britain, showing the fuel could help the country's energy supply in future. The pilot project at Doe Green in Cheshire, northern England, retrieved CBM associated with virgin coal seams for generating electricity. Its gas production is expected to rise over the next year to fuel its 500kW generator, which could power about 1,200 homes.

With UK's domestic output of gas and oil on the decline, the country has emerged a net importer and it has been buying an increasing volume of foreign fuels to cover its needs. The company said the project is commercially viable despite a sharp decline in Britain's wholesale power prices over the past six months.

IGas is to develop a second coal bed methane pilot project at its sites in the Swallowcroft area in Staffordshire, also in northern England, after receiving Field Development Programme approval from the Department of Energy and Climate Change.

The company said a recent independent evaluation showed that the group's resource base had increased by about 40% from an evaluation in November, with recoverable resources in the mid-case estimated at around 503 billion cubic feet.

Underground coal mine expands ActiveMine installation

Active Control Technology Inc announced that an existing customer has expanded its deployment of ActiveMine(TM), the premier wireless voice communications, tracking and data network for the mining industry.

The customer has ordered seven additional MSHA-approved wireless Wi-Fi nodes and network equipment to meet the needs of its expanding underground coal mine in West Virginia, just one month after the initial installation.

The expanded installation is the largest MSHA approved wireless Wi-Fi mesh network in the U.S. and is believed to be the largest underground Wi-Fi mesh network anywhere. The mine's ActiveMine network now has 57 nodes extending several miles underground to two separate mine faces.

ActiveMine's industry-leading, low latency technology enables clear, distortion-free digital voice communications over a mesh network with many wireless 'hops' (signal transmission from one node to the next). In contrast, with other Wi-Fi mesh technologies, voice transmission may not be possible after more than five to six hops. This unique performance is made possible by ActiveMine's use of third-generation Wi-Fi mesh networking technology from MeshDynamics.

The expanded installation has been toured recently by several prospective customers, who have seen first-hand how well it performs in working underground operations.

EVENTS

13-14 Aug 2009, 5th Coaltrans Australia conference, Brisbane, Qld., Australia, Coaltrans Conferences Ltd, Nestor House, Playhouse Yard, London EC4V 5EX, UK, Tel: +44 20 7779 8945, Fax: +44 20 7779 8946, Email: registrations@coaltrans.com, Internet: www.coaltrans.com

19-21 Aug 2009, Coal-Gen 2009 conference, Charlotte, NC, USA, Jennifer Lindsey, COAL-GEN 2009 Registration Department, 1421 South Sheridan Road, Tulsa, OK 74112-6600, USA, Tel: +1 918 832 9313, Fax: +1 918 831 9161, Email: jenniferl@pennwell.com, Internet: www.coal-gen.com

25-27 Oct 2009, Coaltrans London 2009 conference, London, UK, Coaltrans Conferences Ltd, Nestor House, Playhouse Yard, London EC4V 5EX, UK, Tel: +44 20 7779 8945, Fax: +44 20 7779 8946, Email: registrations@coaltrans.com, Internet: www.coaltrans.com

26-29 Oct 2009, 15th International conference on coal science & technology (ICCS&T), Cape Town, South Africa, Mrs Angelique Freyer, Syngas and Coal Technologies, Sasol Technology Research and Development, 1 Klasie Havenga Avenue, PO Box 1, Sasolburg 1947, South Africa, Tel: +27 16 960 4505, Fax: +27 11 219 1095, Email: angelique.freyer@sasol.com, Internet: www.iccst.info

FEEDBACK

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