

DOE Regional Partner Initiates CO2 Injection Study in Virginia

A U.S. Department of Energy (DOE) team of regional partners has begun injecting carbon dioxide (CO2) into coal seams in the Central Appalachian Basin to determine the feasibility of CO2 storage in unmineable coal seams and the potential for enhanced coalbed methane recovery. The results of the study will be vital in assessing the potential of carbon storage in coal seams as a safe and permanent method to mitigate greenhouse gas emissions while enhancing produc-

tion of natural gas.

DOE's Southeast Regional Carbon Sequestration Partnership (SECARB) began injecting CO2 at the test site in Russell County, Virginia, in mid January. Earlier, an existing coalbed methane well had been converted for CO2 injection, and two wells has been drilled to monitor reservoir pressure, gas composition, and the CO2 plume. The targeted coal seams are in the Pocahontas and Lee formations and range from 1,400 to 2,200 feet in



Michael Karmis

depth and from 0.7 to 3.0 feet in thickness. One thousand tons of CO2 will be injected over a 45-day period.

The site was selected because it is representative of the Central Appalachian Basin, an area of about 10,000 square miles located in southern West Virginia and southwestern Virginia. This area has been assessed by researchers to have the capacity to store 1.3 billion tons of CO2 in the coal seams while increasing natural gas production up to 2.5 trillion

cubic feet.

The Central Appalachian Basin CO2 Storage Project will explore the concept of multiple use of subsurface storage volume. Injecting CO2 into coal seams boosts coalbed methane recovery, which provides an immediate commercial benefit and offsets infrastructure development costs, while providing long-term storage of CO2 in the formation, a win-win situation.

The project is being coordinated by the Virginia Center for

VA CO2 Injection Cont. Page 6

New Coal Dewatering Technology Developed

Because there has been no economically viable technology to remove water from ultrafine coal slurries, the ultrafine particles that are the residue of the coal cleaning process have been discarded into hundreds of impoundments. Now, Peter Bethell of Arch Coal Inc. reports that a dewatering technology

developed at Virginia Tech has succeeded in reducing the moisture content of ultrafine coal to less than 20 percent, transforming it to a salable product.

With funding from the National Energy Technology Laboratory (NETL), Roe-Hoan Yoon, the Nicholas T. Camicia Professor of Mining and Mineral Engineering in Virginia Tech's College of Engineering, and his colleagues have developed a hyperbaric centrifuge that can efficiently dewater coal as fine



Dr. Roe-Hoan Yoon

as talcum powder. Such coal fines presently must be discarded by even the most advanced coal cleaning plants because its moisture content in conventional dewatering systems make it unmarketable.

"The hyperbaric centrifuge is like the spin cycle on a washing machine, with the addition of compressed air," said Yoon. "Combining increased spinning and compressed air has a synergistic effect and cuts the moisture in half compared to conventional technology."

"The results were very favorable," said Bethell, director of coal preparation at Arch. "This is material we would have had to discard; therefore, such success would mean reduced refuse in the environment and improved economic returns for the company. It also goes to energy independence because we are using more of the available resource," said Bethell.

"The Arch results mean a lot for getting the Centribaric TM technology started," said Wally

Dewatering Cont. Page 4

Carbon Sequestration Partner Initiates Drilling of CO2 Injection Well in Illinois Basin

The Midwest Geological Sequestration Consortium (MGSC), one of seven regional partnerships created by the U.S. Department of Energy (DOE) to advance carbon sequestration technologies nationwide, has begun drilling the injection well for their large-scale carbon dioxide (CO2) injection test in Decatur, Illinois.

The test is part of the devel-

opment phase of the Regional Carbon Sequestration Partnerships program, an



Office of Fossil Energy initiative launched in 2003 to determine the best approaches for capturing and permanently storing gases that can contribute to global climate change.

The large-scale project will capture CO2 from the Archer Daniels Midland (ADM) Ethanol Production Facility in Decatur, Ill., and inject it in a deep saline formation more than a mile

underground. Starting in early 2010, up to one million metric tons of CO2 from the ADM ethanol facility will be compressed to a liquid-like dense phase and injected over a three-year period.

The rock formation targeted for the injection is the Mt. Simon Sandstone, at a depth between 6,000 and 7,000 feet. The Mt.

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WANTED!

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Coal Leader

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Editorial

Michigan Makes Powerful Mistake

By: Russ Harding

Property Rights Initiative Mackinac Center for Public Policy

By means of an executive directive, Gov. Jennifer Granholm made good on her State of the State promise to restrict new coal-fired power plants. The negative effects on Michigan's energy future were not long in coming, the next day the Bay City Times reported that five pending power plant projects have been put on hold. Before more damage is done, the governor should rescind this directive, or the Legislature should prohibit such a moratorium.

The governor's directive instructs the Department of Environmental Quality to halt environmental permits for new coal plants unless it determines that "a reasonable electricity generation need exists" and that there is no "feasible and prudent alternative." I was director of the DEQ for nearly eight years and can testify that the agency is ill-equipped to consider factors other than environmental ones. Requiring the DEQ to make critical decisions about Michigan's future energy mix is a recipe for stagnation or worse.

Those decisions should be left to the private sector, with environmental regulators limited to enforcing clean air and water standards on whatever type of plant is built. If there is any greater role for the state, it should be performed by the Public Service Commission.

Beyond that, politicians should be honest about energy realities. According to the PSC, coal generated 68.9% of the electricity consumed in the state in 2007, followed by nuclear at 23.3%. Renewable fuels provided 1% percent of our energy needs -- with wind comprising just 0.05%.

The notion that alternative sources can provide more than a fraction of the energy required by a modern industrial

economy is nonsense. Honest environmentalists admit that their real agenda is to radically scale back the size of our economy, lowering our standard of living.

Politicians enacting policies that bring this about either support that agenda, are ignorant of the realities, or are taking political benefits today while calculating they will be long gone before the bitter consequences hit home. That applies to the virtual moratorium on new coal plants and legislation passed last year mandating that 10% of Michigan's electricity come from renewable energy by 2015.

Meeting that mandate is impossible without a major scaling back of our economy. Wind energy is unreliable and must be backed up with other sources, usually natural gas-fired power plants. These plants are expensive to operate, and energy from them will consume a larger share of the discretionary income of Michigan families and businesses. And you don't have to be an expert to know that Michigan's solar energy potential is limited.

Last year, Granholm boasted that Sweden had created hundreds of thousands of renewable energy jobs (although she hasn't been able to support these claims). It's ironic that Sweden just announced that it is lifting a moratorium on building new nuclear power plants, rather than gradually closing down existing ones, as previously planned.

Sweden learned that it can't meet its people's power needs through wind and other renewable energy sources. We can only hope that policymakers here stop pretending that Michigan can, because without coal, the last person leaving Michigan won't have lights to turn off. *cl*

Moratorium on New Coal Plants Will Stifle Economic Growth

Coal Industry News

Carbon Sequestration Killed in Committee

The Montana legislators killed SB-66, a bill that was introduced this session requiring carbon-sequestration for Montana industry, in committee. SB66 was pushed by Democrats as necessary so the coal industry could develop in Montana. However, the Republicans said it was not necessary until the federal government issued its rules. The measure would require of business and industry the expensive process of underground storage of carbon-dioxide which is claimed to cause global warming.

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Kennametal Completes Tricon Acquisition, Expands Mining Industry Business

Kennametal Inc. has completed the previously announced acquisition of the assets of Tricon Metals & Services, Inc. The business will now be known as Kennametal Tricon Metals & Services and will be part of Kennametal's Advanced Materials Solutions Group (AMSG) business.

Founded in 1968, Tricon Metals & Services is among the nation's leading suppliers of proprietary abrasion-resistant plate materials, alloy shafting, and specialty steels for the surface and underground mining markets, including coal, hard rock, and oil sands. A complete service center, it provides material processing, custom fabrications, and technical services, with corporate headquarters in Birmingham, Alabama, and branches in Chicago, Illinois, and Elko, Nevada. Known as the gold standard for consumable parts and customer service, Tricon products include wear plates, wear pins, shafting, and custom-fabricated replacement components.

"Tricon's application expertise and quick response to customer needs provide exceptional value in demanding environments," commented Gary Weismann, Kennametal Vice President and President of Kennametal's Advanced Materials Solutions Group. "It also

provides us an opportunity to leverage our presence in emerging markets, positioning us to further achieve geographic balance. Tricon's leadership position in surface mining, coupled with Kennametal's strength in underground mining, provides a strong basis for capitalizing on world-class technologies and capabilities to deliver continued value, service and solutions to our customers."

Founded in 1938 by metallurgist Philip M. McKenna, Kennametal Inc. is the undisputed global market leader in tools for the mining and road construction industries. Represented in more than 60 countries, Kennametal's world headquarters are located in Latrobe, Pennsylvania, with additional facilities in Rogers, Arkansas, F?rth, Germany, and Essen, Germany. Kennametal designs and builds cutter drums, toolholding systems, and a complete line of point-of-attack conical tools, sleeves, and blocks in a wide range of configurations. These include weld-on blocks and patented quick-change systems requiring no welding and, in certain applications, no bolts.

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Peabody Energy Announces Option to Acquire Coal Interests in Mongolia

Peabody Energy (NYSE: BTU) recently announced that it has obtained an option to purchase up to a 50 percent interest in a joint venture holding Polo Resources Limited's (AIM: PRL) coal and mineral interests in Mongolia.

Polo's Mongolian coal interests have potential resources of over 1 billion tons, with a majority of its coal licenses located in the South Gobi coal region. This region hosts some of the largest metallurgical and thermal coal resources in close proximity to China, with potential to also access the Russian and export markets. Polo also has an active mining operation in Mongolia, with over 100 employees on-site, primarily supplying the domestic market.

Under the agreement, Peabody would also be granted warrants to

enable the company to acquire an approximate 15 percent equity interest in Polo. The transaction is targeted to close during the first quarter of 2009, subject to the completion of Peabody's due diligence review and other approvals.

"A joint venture with Polo's existing platform will accelerate the development of Peabody's presence in one of the world's premier undeveloped coal regions," said Peabody Chairman and Chief Executive Officer Gregory H. Boyce. "Because Polo has existing assets, coal resources and personnel in Mongolia, this transaction advances our goal of expanding our presence in high-growth, high-margin markets."

"Polo is excited about the opportunity to join forces with a company of the calibre of Peabody," said Stephen R. Dattels, Polo's Chief Executive Officer. "This alliance will provide the mining expertise and resources required to develop our asset base and unlock the currently unrecognized value of Polo's Mongolian interests." Peabody is the world's largest private-sector coal company. Its coal products fuel approximately 10 percent of all U.S. electricity generation and 2 percent of worldwide electricity.

Polo is an emerging energy company focused on acquiring and developing advanced stage coal and uranium properties in Asia and Australia.

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Victaulic Acquires Australian Rights to Victaulic Trademark

Victaulic Company announced recently it has purchased the Australian rights to the Victaulic trademark from OneSteel. Terms of the deal were not disclosed.

"This strategic acquisition extends our global ownership of the Victaulic brand and strengthens our ability to sell Victaulic piping products throughout Australia," said Victaulic CEO John Malloy.

OneSteel is a fully integrated, global manufacturer and distributor of steel and finished steel products, self-sufficient in both iron ore and scrap metal. OneSteel is traded on the Australian

Stock Exchange (ASX: OST).

Victaulic, a privately held company headquartered in Easton, Pa., U.S.A., has manufacturing and distribution facilities worldwide and employs approximately 3,500 people. The company, and its subsidiaries, develops products for a full range of industrial, commercial and institutional piping systems.

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Sioux Corporation Celebrates 70th Anniversary in 2009

Sioux Corporation, the leading manufacturer of application-specific, industrial cleaning equipment, water heaters and steam generators, is celebrating 70 years in business during 2009. Sioux is one of the oldest manufacturers in this industry, and the brand is known for reliable products and superior customer support.

The company was started in 1939 as Sioux Motor Cleaner Manufacturing and was sold to John and Virginia (Gini) Finger in 1965. The first units manufactured by Sioux were used to clean automotive engines and farm equipment. As time went on, Sioux changed its customer focus to manufacturing plants, oil and gas companies, concrete plants and mining as well as other heavy duty applications. Sioux continued to respond to market needs, and additional products were added to the lineup, including steam generators, cold and hot water pressure washers, water heaters, solution heaters, and all-electric hot water pressure washers and steam cleaners.

From an old store-front location with seven employees, the company now employs 49 employees and exports to 70 countries around the world. Sioux has several major product lines as well as the ability to engineer custom equipment to customer specifications. Sioux has also built a strong network of distributors and maintains a strong work force and work ethic.

"We are grateful to celebrate such a monumental milestone and we thank our customers and

employees for their continued business and loyalty," stated President/CEO John W. Finger. "We approach every year with the same goal – to provide exceptional customer service, and to improve our products for the markets we serve. This year, we will enjoy it that much more because of the significance."

Sioux Corporation is the leading designer and manufacturer of application-specific, industrial cleaning equipment, specialty water heaters, steam generators and related custom equipment for markets such as petroleum exploration and production, concrete production, mining, manufacturing, greenhouse, marine, government, food and beverage, and utilities. Visit the Sioux Corporation website at www.siuox.com.

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Congresswoman Joins Select Committee at Critical Time for Energy Debate

Rep. Shelley Moore Capito (R-WV) has been outspoken about the need for comprehensive energy solutions and she will now have a new platform for addressing those issues as a member of the House of Representatives' Select Committee on Energy Independence and Global Warming.

Capito will bring a coal-state perspective to the committee's work on energy and climate change.

"Our energy future should be at the forefront of the national discussion, and I'm excited to bring a West Virginia voice to those issues as a member of this committee," said Capito. "From clean coal, to wind energy and other alternative technology, our state has an important role to play."

"The President has pledged to make energy a top priority and this committee stands to be integral in those conversations. I'm honored to be named to this new post and I'm looking forward to working with my new colleagues." cl

NETL Inventions Earn 2009 Technology Transfer Awards

Two technologies developed by researchers at the Office of Fossil Energy's National Energy Technology Laboratory (NETL) have earned 2009 Excellence in Technology Transfer Awards from the Federal Laboratory Consortium for Technology Transfer (FLC). Both technologies enable the cleaner use of coal for electricity production and have been licensed to the private sector for commercial development.

The awards will be formally presented at the annual FLC national meeting to be held May 4-7, 2009, in Charlotte, N.C. The national awards are given for outstanding work commercializing new and innovative technologies developed by federal employees. This year's awards, the most recent in a long line of technology transfer awards for NETL, are for a wet scrubbing process for carbon dioxide capture and for the Thief Process for the removal of

mercury from flue gas.

NETL's wet scrubbing process for carbon capture uses an ammonia-based solution to remove carbon dioxide, as well as sulfur dioxide and nitric oxides, from the flue gases that form during the combustion of coal. As an added benefit, an ammonium sulfate/nitrate fertilizer, a salable commodity, is produced in the process, while the spent ammonia solution is regenerated and recycled to the scrubbing unit, which minimizes cost. NETL patented the process and later licensed it to Powerspan Corp.

The Thief Process, another NETL-developed technology, cost-effectively removes mercury from flue gas. In this process, partially combusted coal from the furnace of a pulverized-coal power plant is extracted and then re-injected into the ductwork downstream of the air preheater to serve as a mercury sorbent. Testing at

laboratory-, bench-, and pilot-scales has shown that the Thief sorbents have capacities for

*Technologies
Capture
CO₂,
Mercury
from Coal
Power Plant
Flue Gases*

mercury capture from flue gas streams that are comparable to those of commercially available activated carbons. Because the

Thief sorbents are significantly cheaper, the process holds great potential for reducing the cost of mercury removal from flue gas. NETL has licensed the Thief Process to Nalco-Mobotec.

Prior to winning national awards for technology transfer from the FLC, both processes earned regional awards from the Mid-Atlantic Federal Laboratory Consortium Region in September 2008.

The National Energy Technology Laboratory (NETL), part of DOE's national laboratory system, is owned and operated by the U.S. Department of Energy (DOE). NETL supports DOE's mission to advance the national, economic, and energy security of the United States.

NETL implements a broad spectrum of energy and environmental research and development (R&D) programs that will return benefits for generations to come:

- Enabling domestic coal, natural gas, and oil to economically power our Nation's homes, industries, businesses, and transportation ...

- While protecting our environment and enhancing our energy independence.

NETL has expertise in coal, natural gas, and oil technologies, contract and project management, analysis of energy systems, and international energy issues.

In addition to research conducted onsite, NETL's project portfolio includes R&D conducted through partnerships, cooperative research and development agreements, financial assistance, and contractual arrangements with universities and the private sector. Together, these efforts focus a wealth of scientific and engineering talent on creating commercially viable solutions to national energy and environmental problems. *d*

New Coal Dewatering Technology Developed

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Schultz, executive vice president at Decanter Machine Inc. of Johnson City, Tenn., which built the prototype unit that was used at Mingo Logan Coal Company's

Cardinal Preparation Plant, a subsidiary of Arch Coal. "The prototype unit was trailer mounted and capable of processing approximately 30 gallons per minute of feed slurry," said Schultz, who was onsite for the tests.

Decanter has been in business since the late 1980s and is the industry leader in screen-bowl centrifuge technology. "We view the Centribaric centrifuge as an extension of our product line to further recover fine coal. Previous centrifuges have not used the compressed air component," Schultz said.

"There has been no technology to economically dewater coal fines below 44 microns," said Yoon. "Now this technology can be used in conjunction with the Microcel™ technology, developed many years ago to remove ash, to re-mine the fine coal discarded to impound-

ments and to help companies minimize waste generation.

"For me, that is a great accomplishment," said Yoon. "People living in coal mining districts will see fewer and smaller slurry ponds. We have done something for the industry and for the public."

"The whole purpose of cleaning coal is to reduce the ash content so that the users, usually utility companies, don't have to deal with it," said Gerald H. Luttrell, the Massey Professor of Mining and Mineral Engineering at Virginia Tech. He added that "the lower-ash and lower-moisture coals also produce less CO₂ (carbon dioxide) to clean up. They burn more efficiently and thus require less coal to generate a given amount of electricity."

For this reason, Yoon and Luttrell have received \$1 million in funding from the U.S. Department of State to also help the Indian coal industry produce a cleaner product. And the Virginia Tech researchers anticipate another project to be

funded by Coal India Limited (CIL), the largest coal company in India, with the same a similar

*Virginia
Tech
Turns
Sludge
to
Powder*

objective. The U.S. Department of Energy has been negotiating with CIL for this project on

behalf of Virginia Tech.

However, plans to install the new technology in the United States may be stalled. During the recent economic downturn, the price of coal dropped precipitously, which may be a barrier for immediate installation of commercial-scale units at plants.

"But when the market improves, we will probably be able to justify spending the capital to install full-scale units," said Bethell, who has been working with Yoon's group for more than 20 years. "We both have Ph.D.s in similar fields, and I like to make sure that we liaise with academia so that if there is anything new we can consider using it." Bethell was the first to implement the Microcel technology.

Yoon arrived at Virginia Tech in 1979 from Canada. With funding from the U.S. Department of Energy, he and his colleagues, Luttrell and Professor Greg Adel, studied the collision between bubbles and particles in water. This fun-

damental study led to the development of the Microcel technology, which is used widely in the mining industry and is considered the best for cleaning fine coal. The group has developed many other technologies that are also in commercial use.

Yoon is the founding director of the Center for Advanced Separation Technology, a consortium of seven universities including Virginia Tech, West Virginia University, University of Kentucky, Montana Tech, University of Nevada at Reno, New Mexico Tech, and the University of Utah. Its goal is to develop advanced separation technologies as applied to energy resources and environmental control. Dr. Yoon was elected to the National Academy of Engineering - the highest honor in engineering, in October 2008. He earned his Ph.D. in metallurgical engineering from McGill University in 1977. He obtained his bachelor's in mining engineering from Seoul National University in 1967. *d*

Coal Leader Product News

AMR's Tagging & Tracking Approved

AMR's Tagging and Tracking System has been approved under the State of WV Legislative Rule Title 56, Series 4.



The Tagging and Tracking System allows mine operators to track the movement of individuals and equipment in the mine continuously and receive messages from underground.

The system design consists of an active tag attached to the miner's helmet or mine equipment and readers placed in selected zones throughout the mine. The miner can send coded messages to the surface through the smart tag.

The Two-Way Text Messaging Device will meet the 2009 requirements by allowing the miner to compose, send, receive, and save messages through a handheld RF device. Not only will this device provide two way communications but it will also provide memory for safety measures, mine directions, and contacts.

Both systems will work in conjunction with our existing atmospheric monitoring system or as a stand-alone system. We hope that our systems will provide a step forward in enhancing mine rescue efforts as well as become an essential in taking the safety of your miners to the next level.

AMR products and service offerings have expanded to satisfy the needs of surface mining, underground mining, and the aggregates industry over the past 25 years.

Continuous improvements in feature content and product designs have broadened the scope of the products and their applications. Where applicable, many of these products are MSHA-approved. AMR offers the attractive combination of safety and productivity in its total product line.

AMR further diversified its

offerings to include monitoring, control and automation services to the water and wastewater industries recently.

For more information or to schedule a demonstration at your location, contact Amanda Ruble 276-928-1712 ext. 221 aruble@americanminere-search.com or visit www.americanminere-search.com.

FLEXCO INTRODUCES THE ELECTRIC BELT CUTTER

Flexco is pleased to announce the introduction of its Electric Belt Cutter. It has been engineered to provide quick and easy cuts on all types of belting from the softest of natural rubbers to the hardest constructed solid woven PVC and fabric plied belts.

The Electric Belt Cutter is available in two sizes and specifically designed to allow the end user to cut belts quickly and safely resulting in less con-



veyor downtime, and overall increased productivity. The EBC1 Electric Belt Cutter is capable of cutting a rubber belt up to 1" (25 mm) and up to a maximum 360 P.I.W. (630 N/m) on PVC belts while the EBC2 cuts rubber belts up to 2" (50 mm) and up to a maximum 1140 P.I.W. (2000 N/m) on PVC belts.

Not only is the Electric Belt Cutter much easier and faster than conventional cutters, but it also allows for longitudinal cuts as well as angled cuts.

The high speed, steel blade is dual angled for a smooth, accurate cut and is protected by a spring loaded blade guard for enhanced worker safety.

The sealed ball bearings

that support the belt during cutting provide nearly friction free feeding of the cutter on the cutting surface requiring minimal effort by the operator. Its heavy duty stainless steel construction is strong, durable, and corrosion free and the permanently sealed gearbox provides for long lasting, maintenance free operation. The Electric Belt Cutter can also be easily adapted for either right or left hand operation.

Flexco provides the world's belt conveyors with efficient, safe products, services, and solutions for mechanical splicing, cleaning, slippage, spillage, and belt tracking. Flexco markets its broad line of products through a worldwide network of distributors under the brand names including Flexco®, Rockline®, Mineline® and Eliminator®.

For more information, visit Flexco's website at www.flexco.com, or contact the Customer Service Department, Flexco, 2525 Wisconsin Ave., Downers Grove, Illinois, 60515-4200, USA. Phone (630) 971-0150; fax (630) 971-1180.

Suspended Belt Magnets

Suspended Belt Magnets are constructed with an oversized Plate Magnet. They are designed for suspension above a belt conveyor and are engineered to remove ferrous contaminants from high volume deep burdens. As product passes under the magnet, metal contaminants are drawn out of the material to the face of the magnet. This style of magnet should be installed at the discharge of the head pulley if possible.

Material will be flowing more freely and can be thrown into the face of the magnet increasing the separation results over an installation that has the magnet suspended over a troughed belt. This can be supplied with a wiper arm or stripper plate to simplify cleaning.

For automated continuous cleaning, a POW-R CLEAN option can be selected which incorporates a set of pulleys, belt, motor, and reducer that travels around the Suspended Belt Magnet discharging metal

contaminants automatically.

Suspended Belt Magnets can be installed in an in-line or cross belt configuration. Used in such industries as: feed & grain, concrete recycling, mining operations, municipal recy-



cling, scrap yards, and other recycling and bulk processing industries. For more information contact: Andrea Ezyk, Puritan Magnetics, Inc., 465 S. Glaspiet St., Unit B, Oxford, MI 48371 Phone: 248-628-3808; Fax: 248-628-3844 Email: andrea@puritanmagnetics.com or visit website: www.puritanmagnetics.com

Jennmar Offers Advanced Ground Control Engineering

Keystone Mining Services is the engineering affiliate company of Jennmar Corporation that oversees research and development. KMS conducts extensive ground control engineering for Jennmar. KMS has made improvements to its computer modeling packages, including



primary and supplemental bolting, pillar design, optimum long-wall orientation and mining sequence, and seam interaction stresses.

The ultimate goal of Keystone Mining Services and Jennmar is to utilize existing and new products and advanced ground control engineering to improve mine safety and productivity.

Cat 854K Wheel Dozer Features Offers New Features

The Caterpillar 854K wheel dozer incorporates innovations to lower engine emissions and boost fuel efficiency, improve reliability and serviceability, and optimize operator efficiency and comfort. Specifically, the 854K

uses a highly efficient Cat C32 engine and a new radiator with improved heat transfer capabilities. A variable speed demand fan aids efficiency. For the operator, a new, larger cab includes a trainer's seat, and a new low effort joystick controls all blade functions.

The 854K replaces the 854G and retains the best features, including the impeller clutch torque converter for superior operator control and optimum power to the ground, lockup clutch for direct drive efficiency, and STIC™ control system for reduced steering and transmission control effort.

The 854K is the largest wheel dozer in the Caterpillar line and is engineered for demanding work in large dozing applications, such as mining and bulk materials handling,



where mobility increases productivity.

The Cat C32 engine, rated at 800 net horsepower (597 kW) features ACERT Technology, an exclusive Cat emissions reduction solution. The 12-cylinder engine is a V configuration with displacement of 1,960 cubic inches (32.1 liters).

A combination of technologies makes the Cat C32 engine clean, quiet, fuel efficient and compliant with US EPA Tier 2 standards and EU Stage IIa standards.

The 854K also features a true demand fan for enhanced fuel efficiency and quieter operation.

The 854K drive train features the proven impeller clutch torque converter (ICTC). The system allows the operator to modulate rimpull efficiently using the left pedal for smooth operation and extended tire life.

The new blade control is a low-effort, pilot-hydraulic joystick. To speed maintenance work, Cat Product Link is available from the factory.

Contact your local Cat dealer or visit the Cat web site at www.cat.com.

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Coal and Energy Research. The center's director, Dr. Michael Karmis, has praised the gas operator, CNX Gas, the mineral owner, Buckhorn Coal, and the supply vendors, including Praxair and Denbury Resources, for their "tremendous cooperation and support" of the project.

"In addition," Karmis said, "I would like to thank the NETL team that has worked with Virginia Tech and Marshall Miller and Associates

researchers to establish baseline measurements and develop a comprehensive monitoring program."

Initiated in 2003, DOE's Regional Carbon Sequestration Partnership Program now includes seven partnering regions that were established to determine the best approaches for capturing and permanently storing CO₂, a greenhouse gas that contributes to global climate change. The partnerships are made up of state agencies,

universities, private companies, and nonprofit organizations that form the core of a nationwide network helping to establish the most suitable technologies, regulations, and infrastructure needs for large scale carbon capture and storage.

The partnerships include more than 350 organizations, spanning 42 states, three Indian nations, and four Canadian provinces. NETL manages the partnership program for DOE's Office of Fossil

Energy.

SECARB is led by the Southern States Energy Board. SSEB's mission is to enhance economic development and the quality of life in the South through innovations in energy and environmental policies, programs and technologies and represents more than 100 partners and stakeholders in 13 southeastern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina,

South Carolina, Tennessee, Texas, Virginia, and West Virginia.

The Central Appalachian Basin CO₂ Storage Project is one of four pilot tests that the partnership is sponsoring for the validation phase of the project. In this phase, multiple sequestration sites and technologies are being validated in preparation for large-scale injection that will occur in the development phase. **d**

IL CO2 Injection Cont from Page 1

Simon Sandstone is the thickest and most widespread saline reservoir in the Illinois Basin, with an estimated CO₂ storage capacity of 27 to 109 billion metric tons. Analysis of data collected during the characterization phase of the project indicated that the lower Mt. Simon formation has the necessary geological characteristics to be

a good injection target.

In January, ADM, in collaboration with the Illinois State Geological Survey at the University of Illinois, which leads the MGSC, was issued an Underground Injection Control permit by the Illinois Environmental Protection Agency for the injection well.

Obtaining the permit is sig-

nificant because it allows the consortium to proceed with drilling, making the MGSC the first DOE Regional Partnership to begin drilling a development phase injection well. The drilling is expected to take about two months to complete.

Following injection, a comprehensive monitoring program will be implemented to ensure

that the injected CO₂ is safely and permanently stored. The position of the underground CO₂ plume will be tracked, and deep subsurface, groundwater, and surface monitoring around the injection site will be conducted. The monitoring program will be evaluated yearly and modified as needed.

The project under which this

effort is being performed will, on average, create nearly 250 full-time jobs per year. These jobs will be supported throughout the project's life of more than ten years, thus resulting in more than 2,500 job-years (calculated as the number of full-time jobs per year times the number of years that the jobs are supported.)

MGSC is one of seven regional partnerships in a nationwide network that is investigating the comparative merits of numerous carbon capture and storage approaches to determine those best suited for different regions of the country.

The consortium is investigating options for the 60,000 square mile Illinois Basin, which underlies most of Illinois, southwestern Indiana, and western Kentucky. Emissions in this area exceed 304 million metric tons of CO₂ yearly, mostly attributed to the region's 126 coal-fired power plants.

The MGSC is led by the Illinois State Geological Survey, in conjunction with the Indiana Geological Survey and the Kentucky Geological Survey, and covers Illinois, southwestern Indiana and western Kentucky. This partnership was established to assess geological carbon sequestration options in the 60,000 mi² oval-shaped, geologic feature known as the Illinois Basin. Within the Basin are deep, noneconomic coal resources, numerous mature oil fields and deep saline rock formations with potential to store CO₂. MGSC's objective is to determine the technical and economic feasibility of using these geologic formations for long-term storage. **d**

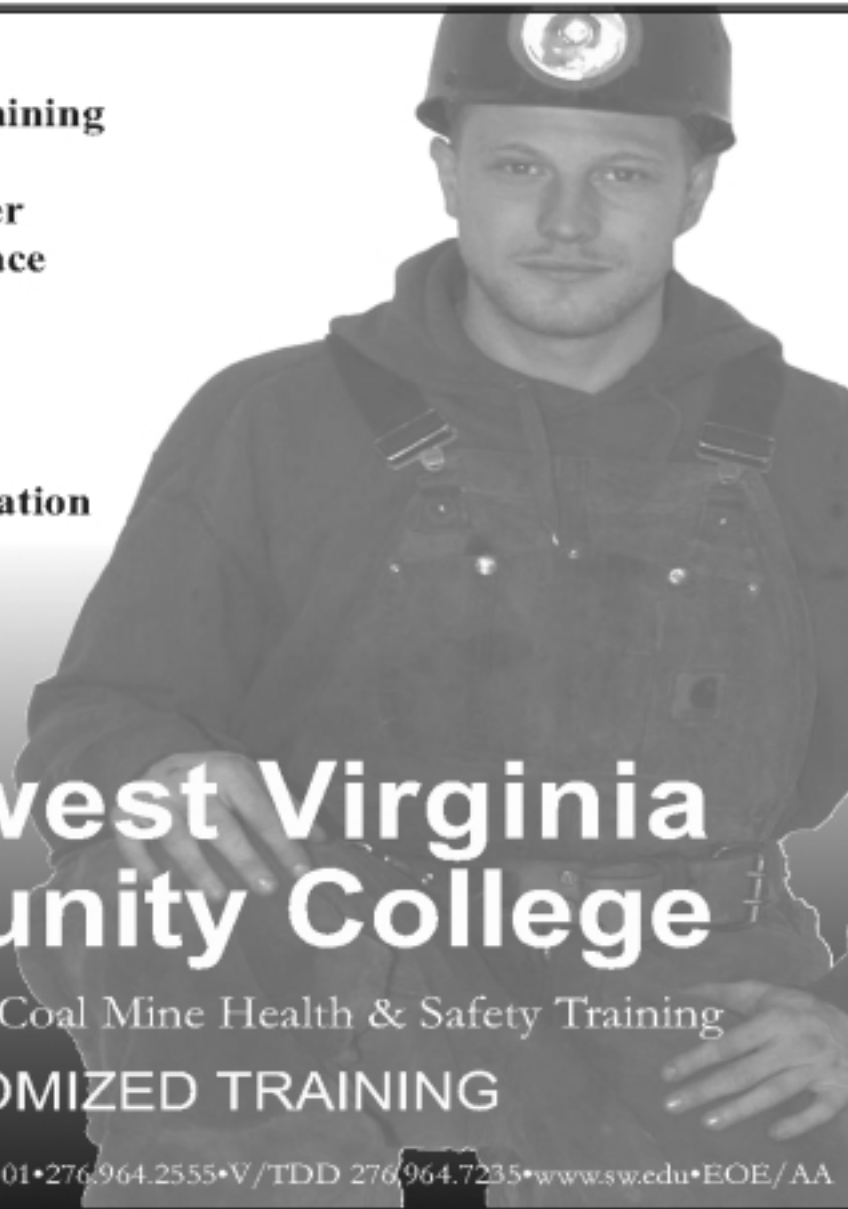
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UtahAmerican Energy Seeks To Implement Plan To Maximize Safety In West Ridge Mine

UtahAmerican Energy, Inc. and its subsidiary, Andalex Resources, Inc., a co-owner of the West Ridge Mine with Intermountain Power Agency, are totally committed to ensuring the safety of its employees at the West Ridge Mine. As such, it has been working closely with the Mine Safety and Health Administration (MSHA) to assess conditions at the Mine following three minor "mountain bumps" during the last week of January. One miner sustained minor injuries when he fell during a bump, not as a result of being hit by bursting coal, as has been reported.

Since the review of mine conditions began, mining consultants to the Company expert in longwall mining in Utah have disagreed with MSHA on its approach to ensuring employee safety at the Mine. After MSHA

twice ordered the West Ridge Mine longwall shut down, forcing the layoff of employees, the Company engineered and installed a remote mining system that allowed the longwall to continue limited operations. This was voluntarily developed by the Company, and not ordered by MSHA, as mistaken press reports have claimed. Even though the automated system has been working and all employee safety has been provided, the longwall is idled again, as MSHA has directed the Company to stop mining immediately at the next cross-cut, pull the longwall out, and move to another panel which is not available.

The Company's engineers and experts believe that removing the longwall at the location directed by MSHA would be very dangerous. Our experts

believe that MSHA's order, directed from Washington, D.C., by a senior agency repre-

*Experts Feel
Their Plan
Safer Than
MSHA's*

sentative, who has no actual mining experience with longwall mines in Utah, and who has been given incorrect information from MSHA representatives at the Mine site, will jeopardize the safety of its employees.

"Dr. Syd S. Peng, world renown expert in longwall mining, including deep cover

mines, supports the Company in saying it is safer for the West Ridge Resource employees to mine the remainder of the longwall panel rather than to recover the longwall in the current location, as mandated by MSHA officials in Washington, D.C. Dr. Peng goes on to state that "based on the current conditions in the tailgate and considering the success of the company's remote mining system, I believe the safety of the miners is better served by continued mining." Other Company consultants support this position.

"Shutting down operations and forcing implementation of certain plans is an abuse of discretion and a capricious use of supervisory authority by MSHA," said Kevin Anderson, an attorney for the Company. "We are getting advice from

some of the best geo-technical people in the world, as well as from our miners who have worked in western mines their entire lives. Their opinions are in stark contrast to those of regulators in Washington D.C. who have no western mining (deep cover) experience."

According to Anderson, the Company regrets that it has no other option than to seek legal remedy. "Our primary concern is the safest mining plan to protect our miners. Our other concerns are that our employees have been, and are continuing, to be left without a paycheck because the Mine has been idled due to this arbitrary decision making by an MSHA official in Washington, which is contrary to the advice of the world's best geo-technical experts." *ed*

Poland's Lagisza Power Plant Supercritical Circulating Fluidized Bed On Line

First electricity generated by the new 460 MW power block in the Southern Poland Power Company Lagisza Power Plant flowed to the grid on February 15th, 2009.

The synchronization with the National Transmission Grid took place at 09:09 p.m. All works were carried out according to the schedule. The new block will be put into operation at the turn of the 1st and 2nd quarter of 2009 after the 720-hour test start-up.

Due to high efficiency of the facility the CO2 emission to the atmosphere will be 25% lower compared to the units presently in operation in Lagisza Power Plant. What is more, in case of both SO2, and NOx the emission will not exceed 200 mg/m3 which meets the requirements of the EU directives and is in accordance with the Accession Treaty stipulations.

The power of the block will amount to 460 MW. The investment costs circa PLN2 billion and is financed from the company's own resources, pro-ecological resources as well as from bond emission. The block in Lagisza will consume circa 1.2 million tons of coal annually. Work started at the site in February 2006 and, at June

2007, the boiler island was about 20% complete. The order was placed by Poland's largest utility, Poludniowy Koncern Energetyczny (PKE), and the unit will be the world's largest CFB design of any type built so far.

"The Lagisza unit will be the world's largest CFB design of any type built so far."

The new unit is being built alongside PKE's existing 840MWe power station at Lagisza (northeast of Katowice in Upper Silesia). It is part of an ongoing program by PKE to replace outdated capacity with modern, high-efficiency plant. Operating seven other power stations in southern and western Poland, PKE is the country's largest electricity utility, with 5,056MW of installed generating capacity.

Foster Wheeler Energia Oy and its Polish subsidiary, Foster Wheeler Energia Polska Sp zoo jointly executed the contract.

The Lagisza plant has efficient fuel usage and low emissions, fully meeting the requirements of the EU's new large combustion plant (LCP) directive. Total plant efficiency will be above 43%.

Supercritical steam cuts fuel use per GWh of electricity gen-

erated by some 5% over conventional drum-based boilers. An equivalent increase in fuel efficiency has typically taken up to ten years of cumulative developmental work to achieve, so achieving this improvement in a single step is a major achievement. A modular design approach enables supplier Foster Wheeler to offer even larger units of the same type in the future.

Circulating fluidized beds burn many fuels cleanly, including waste coals, petroleum coke, and even shredded automobile tires. They have been installed at chemical plants, steel plants and other industrial facilities around the world. They range in size from relatively small industrial units to large "utility-scale" installations rated at hundreds of megawatts.

The low combustion temperature (~850°C) of the CFB minimizes NOx and permits optimum sulphur capture, while the flywheel of circulating solids permits significant variations in fuel properties. CFB-furnace heat fluxes are also less than half those of peak heat fluxes in pulverized-coal furnaces. As a result, low mass-flow rates can be used in the furnace tubes without concern for tube over-

heating.

The flywheel of circulating solids also provides relatively uniform heat-absorption rates, which minimize concerns for heat absorption unbalances. Foster Wheeler, which supplies the CFB, uses a Siemens Benson vertical OTU (once-through unit).

Boilers for utility power generation are either "drum" or "once-through" types, referring to how water is circulated to cool the tubing that forms the furnace enclosure. Heat is transferred through the tubes and into the water passing through to generate steam. In drum-type units, the steam-flow rate is controlled by the fuel-firing rate.

Superheat steam temperature is determined by properly sizing the superheater heat-transfer surface, and is controlled by spraywater. In a once-through type boiler, the steam-flow rate is established by the boiler feedwater pump and the superheat steam temperature is controlled by the fuel-firing rate. Since the once-through boiler does not rely on the density difference between steam and water to provide proper circulation and cooling of the furnace enclosure tubes, it can be oper-

ated at supercritical (more than 220bar / 3,200psia) pressures. Then, greater steam-turbine efficiency improves plant heat rates. Efficiency increases by roughly 3% on making the transition from 167bar, the standard for drum boilers, to 250bar without significant increases in investment costs.

With about 1,000 units, the Benson boiler is the most common implementation of the once-through design. "With about 1,000 units, the Benson boiler is the most common implementation of the once-through design."

The state-owned Poludniowy Koncern Energetyczny (PKE) is Poland's largest utility, generating about 18% of the power and 16% of the heat produced in Poland. The Lagisza project is the largest energy-sector investment to be financed without being guaranteed by long-term contracts.

PKE used its own capital, state funds and money from assorted Polish environmental protection funds. PKE negotiated with Polish power grid operator PSE for access to its high-voltage transmission system, allowing the company to export the power generated from the new Lagisza power block. *ed*

NAM Says EPA Should Not Reconsider Carbon Dioxide Permits for Power Plants

The National Association of Manufacturers (NAM) has filed a motion to intervene in a case involving whether preconstruction permits for new power plants granted by the Environmental Protection Agency (EPA) must include "best available control technology" (BACT) for carbon dioxide.

In the Deseret Power decision in 2008, the EPA Environmental Appeals Board rejected a contention by the Sierra Club that such permits should include BACT for carbon dioxide, but sent the case back to the EPA to reconsider whether to impose the requirement under its discretionary

authority, and to develop an adequate record for its decision. It encouraged the EPA to consider whether the issue in this case should be resolved "in the context of an action of nationwide scope, rather than through this specific permitting proceeding."

Former EPA Administrator Stephen Johnson issued an interpretation guidance memorandum on December 18, 2008, concluding that PSD permits (for the Prevention of Serious Deterioration of air quality) do not need to include BACT limits for greenhouse gases. The Sierra Club is challenging that guidance, and the NAM, along

with other business groups, is supporting it.

Manufacturers Defend Previous Memorandum on BACT Guidance

New EPA Administrator Lisa Jackson announced she would review the Johnson decision.

"This is most unfortunate," said Quentin Riegel, NAM Vice President for Litigation and Deputy General Counsel. "If the environmental groups succeed in having this policy overturned, the number and types of facilities requiring EPA permits would explode resulting in an impassable regulatory gridlock that would overwhelm permitting authorities and bring new permits to a halt. Even department stores, schools and office buildings would have to have Clean Air Act preconstruction permits."

"The NAM believes that programs under the decades-old Clean Air Act are not the appro-

prate mechanisms for dealing with climate change," Riegel said. "Congress should address this issue in a new and comprehensive manner that will inflict no harm on the struggling U.S. economy."

The National Association of Manufacturers is the nation's largest industrial trade association, representing small and large manufacturers in every industrial sector and in all 50 states. Headquartered in Washington, D.C., the NAM has eleven additional offices across the country. Visit the NAM's web site at www.nam.org for more information about manufacturing and the economy. **d**

AEP Operating Units Add Another 250 MW of Renewable Energy

American Electric Power (NYSE: AEP) operating units have signed power purchase agreements for renewable wind energy totaling approximately 250 megawatts (MW) to serve customers in IN, MI, OH, VA and WV. With these new agreements, AEP has contracted for 903.4 MW of wind generation capacity since 2007, when the company committed to adding 1,000 MW of renewable wind energy to its generation mix by 2011.

AEP's Appalachian Power unit has contracted to purchase 100.5 MW from a wind farm in LaSalle County, IL., that is being developed by Invenery Wind LLC. AEP Ohio will purchase 100 MW from a wind farm in Benton County, IN., that is being developed by BP Wind Energy. AEP's Indiana

Michigan Power unit will purchase another 50 MW from the same wind farm in Benton County. All of the power purchase agreements are for 20 years. Pricing terms are confidential.

"Since we built the first utility-scale wind farm in Texas nearly 14 years ago, AEP has supported the development of renewable generation to help diversify the U.S. electricity generation mix and reduce greenhouse gas emissions," said Michael G. Morris, AEP chairman, president and chief executive officer. "We have been able to effectively execute our aggressive plan to add 1,000 megawatts of wind energy to serve our customers in just a few years due to the rapid growth in U.S. wind projects. That growth has been fueled, in



Mike Morris

part, by federal tax credits that support renewable energy development. Those credits should be extended, as proposed in the current economic stimulus plan, to encourage renewable energy developers and equipment manufacturers

to make additional investments in facilities that will support the U.S. economy.

"Continuing rapid expansion of renewable electricity generation in the United States also requires a federal plan for an extra-high voltage transmission superhighway to move renewable energy from where it is most abundant and viable to population and electricity load centers. That plan must include federal oversight for siting and widespread cost allocation for these long-distance, extra-high voltage transmission projects. Without mechanisms to support faster development of an efficient, extra-high voltage interstate transmission system, we won't be able to achieve renewable electricity generation at 20 to 30 percent levels in our country," Morris said.

When the wind generation from these new contracts is on line, AEP's generation mix will include 310 MW of wind turbines owned and operated by AEP in Texas and another 1,371 MW of long-term wind energy purchase agreements for a total of 1,681 MW of wind energy in the company's generation portfolio.

Today, 68 percent of AEP's energy comes from coal. In addition to developing new coal technologies, the company is increasing the diversity of the fuels used to produce electricity. Natural gas units emit about half the CO2 compared with similarly sized coal units. However, natural gas is subject to price volatility and supply issues. **d**

Dominion Virginia Power Tests Plug-In Hybrid Vehicles

Dominion Virginia Power has added two plug-in electric hybrid cars and two hybrid-powered bucket trucks to its fleet as part of its efforts to determine the impact of plug-in vehicles on electricity demand and to find ways to conserve energy and reduce vehicle emissions.

"Hybrid vehicles and plug-in hybrid electric vehicles are well-suited to the urban locations Dominion serves," said David

A. Heacock, president of Dominion Virginia Power. "We are putting these vehicles through their paces to determine how they perform in our service area. It will be important to determine how they impact the need for additional electricity - especially at peak early-evening hours - if they become widespread."

The U.S. Department of Energy's (DOE) Idaho National Laboratories will analyze the

Dominion test data as part of a larger study of modified hybrid vehicles.

Greenhouse gas emissions for the plug-in versions are half those of a standard Prius and about 80 percent less than those of a gas-powered midsize sedan.

Dominion also is operating



two hybrid bucket trucks that use battery power both for driving and for operating the bucket. The truck's diesel engine provides power to recharge the batteries and runs far less often than that of a standard truck. These trucks, which produce lower emissions and less noise, have been assigned to Dominion's offices in Northern Virginia.

The company uses approximately 1.7 million gallons of

biofuel per year in 783 trucks. Lower vehicle operating costs resulting from improved fuel economy and reduced engine maintenance requirements offset the slightly higher cost of biofuel.

Dominion is one of the nation's largest producers of energy, with a portfolio of approximately 27,000 megawatts of generation. Dominion serves retail energy customers in 12 states. **d**



Rick Boucher
U. S. House of
Representatives



Michael Karmis
VA Tech/SECARD



Kenneth Nemeth
SSEB



Ned Leonard
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Tour of Eastman Coal Facility for Conference Attendees will be May 11 (Monday) beginning at 11:45 a.m. Tour approximately one hour. Yes () No ()

CONFERENCE REGISTRATION FEES: (Before April 30, 2009)

Conference Registration includes Reception, Breakfast, Luncheon, Breaks,

Conference Materials, and tour of Eastman's Coal Facility. Check the appropriate boxes:

_____ Have a Golf Foursome for only	\$400.00	_____ Golf Tournament at Cattails at MeadowView
_____ (Golf handicap _____)	\$125.00	
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All exhibits and exhibitors are subject to the regulations and rules established by the Eastern Coal Council (sponsor). Exhibit shall be arranged so as not to obstruct the general view or hide another exhibitor. Any pre-built booth MUST be approved by the Eastern Coal Council Expo Committee. The sponsor will not be liable for loss or damage to the property of the exhibitor or his representatives or employees from theft, fire, accident, or other cause. However, exhibit area will be locked when not in use. The Sponsor will not be liable for injury to exhibitors, their employees, or third persons, which claims for damages, injuries, etc., may be incident to or arise from, or be in any way connected with their use of occupation of display space. The exhibitor shall indemnify the sponsor for any costs or expense, exclusive of counsel fees, arising from any such claim. Exhibitors shall, at no cost to the sponsor, obtain adequate and reasonable liability and property damage insurance from responsible insurance companies. The exhibitor assumes all responsibility for compliance with local, state, and federal ordinances, laws and regulations covering fire, safety and health, and all rules and regulations of the Meadowview Conference Resort & Convention Center. PAYMENT IN FULL for all booths must be made by May 1, 2009. For additional information contact Eastern Coal Council.

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Eastern Coal Council Celebrates 30th Annual Conference

"Coal: America's Path to Energy Security" will be the theme for the Eastern Coal Council's 30th annual conference and exposition, May 11 and 12, 2009, at the Meadowview Conference Center, Kingsport, TN. The Eastern Coal Council was founded in 1979 as a membership organization representing industries, businesses, educational institutions, educators and researchers, and elected officials who work together to promote coal and to educate people about the importance of coal as it relates to energy production and national energy security. The Council has played a leading role in promoting coal as the appropriate energy source for America's future. Coal is an abundant and natural resource in America. There is enough coal to meet this nation's energy needs now and into the future.



Meadowview Conference Center

The theme for this year's meeting, **"Coal: America's Path to Energy Security,"** will highlight America's need to expand energy independence through clean coal technologies, coal to liquids, carbon capture and storage, the electric grid, and critical opportunities and issues facing energy

industries. Coal and electric power are essential to modern society. The fact remains that this nation's economic prosperity cannot be achieved without electricity, and enough electricity cannot be generated to meet demand without coal.

Rick Boucher (VA), U. S. House of Representatives and

Kevin Crutchfield, President, Alpha Natural Resources will headline the meeting.

The U. S. Department of Energy has put together a session on Carbon, Capture and Storage highlighting industry researchers.

Limited exhibit space is available. The cost for exhibit

space is only \$500.00. One person attends all meeting functions and special activities planned for attendees.

The annual golf outing will be Monday afternoon, May 11th at the Meadowview's Cattails, which is nestled between the rolling foothills of the Appalachian and Great Smoky Mountain, offering fantastic scenery as you play the challenging par 71 golf course. The 18 Hole championship course was designed by the renowned Denis Griffiths and is conveniently located adjacent to the Hotel.

For additional information or to register contact the Eastern Coal Council at 276-964-6363 or 964-9088, or visit Eastern Coal Council's website for additional information and updates

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*Gary Trump, Director of Coal Preparation
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*Allan Pollastrini, Maintenance Supervisor
Eastern Associated Coal, Fairview, WV*

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Alpha Natural Resources Announces Executive Appointments

Alpha Natural Resources, Inc. (NYSE: ANR) recently announced that Vice President, Treasurer and Chief Financial Officer David S. Stuebe is retiring effective February 16, 2009. The company's board of directors has appointed Eddie W. Neely to serve as the company's Chief Financial Officer and Executive Vice President.

Mr. Stuebe, 68, joined Alpha's management team in 2003 as Vice President and Chief Financial Officer of Alpha Natural Resources, LLC. He assumed those same roles, and the Treasurer's role, with Alpha Natural Resources, Inc. before the company went public in February 2005.

Mr. Neely, 57, was appointed Secretary of a predecessor company to Alpha in August 2002, and has served as Vice President and Controller since Alpha's formation in November



David S. Stuebe

2004. He has also served as Vice President and Controller of Alpha Natural Resources, LLC, a subsidiary, since 2003.

Additionally, Philip J. Cavatoni is joining Alpha in the newly created position of Treasurer and Executive Vice President - Finance and Strategy. Mr. Cavatoni, 45, comes to Alpha from JP Morgan Chase & Co., where he

was most recently a Managing Director responsible for the Paper, Packaging and Building Products investment banking practice. Mr. Cavatoni has also held other senior investment banking positions in JP Morgan's Mergers & Acquisitions group. Mr. Cavatoni received his Bachelor of Science degree from Drexel University and his Masters of Business Administration from the University of Chicago Booth School of Business.

"We welcome Phil and the extensive finance and M&A experience he brings to Alpha, and we congratulate Eddie Neely on his well-deserved promotion," said Alpha's Chairman and CEO, Mike Quillen. "At the same time, we thank David Stuebe for his dedication and guidance, helping bring Alpha from its birth just five years ago to where we stand today. In that



Philip J. Cavatoni

time David played a major role in getting us through our IPO and secondary offering, a major financial recapitalization, the integration of several acquisitions, and the timely adoption of Sarbanes-Oxley. His retirement is certainly well deserved and comes at a time when Alpha's balance sheet and liquidity has never been healthier. We're extremely grateful for his contri-

butions and wish him success in his future endeavors."

Alpha Natural Resources is a leading supplier of high-quality Appalachian coal to electric utilities, steel producers and heavy industry. Approximately 89 percent of the company's reserve base is high Btu coal and 82 percent is low sulfur, qualities that are in high demand among electric utilities which use steam coal. Alpha is also the nation's largest supplier and exporter of metallurgical coal, a key ingredient in steel manufacturing.

Alpha and its subsidiaries currently operate mining complexes in four states, consisting of 60 mines supplying 10 coal preparation and blending plants. The company and its subsidiaries employ more than 3,600 people. *dl*

PJM Study Assesses Possible Impact of Climate Control Legislation

A recently released PJM Interconnection study concludes that the leading legislative proposals* of the 110th Congress to reduce carbon dioxide (CO₂) emissions from fossil fuel generation plants could result in wholesale electricity price increases ranging from \$7.50 per megawatt hour (MWh) to \$45/MWh in 2013.

The study, "Potential Effects of Proposed Climate Change Policies on PJM's Energy Market," also noted that at those prices the annual market wide cost of power increase would range from \$5.9 billion to \$36 billion.

"We recognize that legislation to reduce carbon emissions will have a significant impact on PJM, our members and their customers," noted PJM CEO Terry Boston. "This study was undertaken to help inform decisions of our members and the discussions in Washington and elsewhere. We're not trying to influence or shape policy, but do believe as the largest grid in North America that we're in a good position to demonstrate with how climate control proposals will affect wholesale market prices."

The study's calculations are

based on projected carbon prices within ranges identified by the U.S. Environmental Protection Agency and the Energy Information Administration from \$10 to \$60 per ton and on typical residential use of 750 kilowatt-hours (kWh) per month.

The study used market models to simulate in 2013 the impact of climate change legislation whereby cap and trade or carbon tax policies place a cost on emitting CO₂. The year 2013 is examined as the year when major legislative proposals would be effective, and also because it represents PJM's five-year planning horizon, where there is a greater likelihood of predicting accurately the planned new generation and transmission system upgrades that will be commercially operational. PJM's study is one of the few analyses that have examined the near term impacts of climate change policy on a regional basis as opposed to more macro-economic national analyses. The findings assume no offsets for making homes, businesses and industry more energy efficient or efforts to reduce electricity demand.

According to the study, however, reducing electricity consumption by two percent to 10 percent could lower prices between \$3/MWh and \$13/MWh, or between \$3 billion and \$17 billion per year.

The same reductions in consumption would lower CO₂ emissions between 12 million and 60 million tons in 2013.

"We recognize that legislation to reduce carbon emissions will have a significant impact on PJM, our members and their customers"

Wind, a renewable energy resource, represents about 40 percent of all new generation projects proposed in the PJM region. Analyzing the impact of the addition of 15,000 megawatts (MW) of wind by 2013, about one-third of wind generation in the interconnec-

tion queue, revealed that CO₂ emissions would be reduced by nearly 35 million tons and wholesale market prices collectively would decline by \$3.55 billion to \$4.74 billion, without calculating the effect of CO₂ prices.

The study, led by PJM Senior Economist Dr. Paul Sokolowicz and the Market Simulation Department, also determined that only beginning at CO₂ prices of about \$40/ton will natural gas combined cycle generating units will be run in place of coal generating units on a large scale. A \$40/ton emission cost results in an increase in wholesale electricity costs of approximately \$30/MWh and a residential price increase of about \$22.50/month.

* The Lieberman/McCain Bill (S.280), the Bingaman/Specter Bill (S.1766) and the Lieberman/Warner Bill (S.2191).

PJM Interconnection ensures the reliability of the high voltage electric power system serving 51 million people in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of

Columbia. PJM coordinates and directs the operation of the region's transmission grid, which includes 6,038 substations and 56,350 miles of transmission lines; administers a competitive wholesale electricity market; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion.

• Acting as a neutral, independent party, PJM operates a competitive wholesale electricity market and manages the high-voltage electricity grid to ensure reliability for more than 51 million people.

• PJM's long-term regional planning process provides a broad, interstate perspective that identifies the most effective and cost-efficient improvements to the grid to ensure reliability and economic benefits on a system wide basis.

• An independent Board oversees PJM's activities. Effective governance and a collaborative stakeholder process help PJM achieve its vision: "To be the electric industry leader, today and tomorrow, in reliable operations and efficient wholesale markets."

Visit PJM at www.pjm.com *dl*

SECA Fuel Cell Program Moves Two Key Projects Into Next Phase

The U.S. Department of Energy (DOE) has selected two projects for continuation within the Department's Solid State Energy Conversion Alliance (SECA) Program research portfolio. The projects, led by FuelCell Energy, in partnership with VersaPower Systems(CO), and Siemens Energy, have successfully demonstrated solid oxide fuel cells (SOFCs) designed for aggregation and use in coal-fueled central power generation. Further development of these low-cost, near-zero emission fuel cell systems will substantially contribute to solving the Nation's energy security, climate, and water challenges.

The selections were based upon an assessment of demonstrated progress in developing high-performance, low-cost SOFC technology. FuelCell

Energy is testing two ~10kilowatt SOFC stacks incorporating planar cells; each has surpassed 4,700 hours of operation to date. Similarly, Siemens is testing a ~10kilowatt SOFC stack incorporating its new higher power Delta cells, with 2,500 hours of operation to date. With the continuation, these projects will pursue cell materials and design development to further improve performance, reduce cost, and integrate the cells into larger stacks for evaluation and incorporation into larger demonstrations beginning in 2012.

From an environmental perspective, fuel cells are one of the most attractive technologies for generating electricity. SOFCs operate by separating oxygen from air and transferring it across a solid electrolyte membrane, where it reacts with

a fuel, such as synthesis gas derived from coal, biofuels, or natural gas, to produce steam and carbon dioxide (CO₂). Condensing the steam results in a pure stream of CO₂ gas, which can be readily captured for storage or other use in a central location. This feature, coupled with very high efficiencies and the fact that fuel cells operate more efficiently at lower temperatures than combustion-based technologies, results in near-zero emissions. In addition, eliminating the need for steam bottoming cycles, and the ability to keep fuel and air streams separate, significantly reduce water withdrawal.

To realize the intrinsic advantages of SOFCs requires achievement of SECA's cost reduction goals. Projects in the SECA portfolio are conducting research and technology devel-

opment to lower costs and improve reliability, ultimately culminating in the demonstration of fuel cell technologies that can support power generation systems as large as several hundred megawatts capacity. Key program goals, as defined by the Office of Fossil Energy and the U.S. Office of Management and Budget, include:

- Cost of \$175 per kilowatt (2007 dollars) for a minimum 40,000 hour fuel cell stack.
- Cost of \$700 per kilowatt (2007 dollars) for an integrated fuel cell power block.
- Maintaining high power density in the large cells necessary for economic manufacturing.

SECA was established by DOE's Office of Fossil Energy in 2000 to research and develop low-cost, modular, fuel-flexible SOFC systems by 2010. In

early 2005, the SECA program was accelerated to deliver megawatt-class fuel cell systems in response to the emerging national need for low-cost carbon capture technologies, near-zero emissions, and the need to reduce water withdrawal in power plants. Demonstrations are planned for 2012, 2015 and 2020:

- 2012—Multiple 1 megawatt systems to demonstrate 5-year life by 2017.
- 2015—Multiple 5 megawatt systems to demonstrate system integration with heat recovery turbines, power electronics, and other system level features by 2017.
- 2020—Full scale 250–500 megawatt integrated gasification fuel cell plant as part of DOE's Near-Zero Emissions Coal-Based Electricity Demonstration Program. **d**

Peabody Energy Introduces New State-Of-The-Art Bus Fleet

For Powder River Basin Employees

Demonstrating safety as a core value at work and away, Peabody Energy has brought 14 new state-of-the-art busses into service that provide 1,000 employees with daily roundtrip transportation to the North Antelope Rochelle Mine near Wright, WY. The North Antelope Rochelle Mine is one of America's largest coal mines, producing the lowest sulfur coal in America.

The busses are equipped with the latest safety features that include three-point seat belts, an engine compartment fire suppression system and a driver safety monitoring system.

These customized features are the result of nearly two years of research and design with the vendor. Bus transportation is offered as a benefit to employees commuting from the Gillette, Wright, Douglas and Casper areas to the mine.

Safety is our highest priority in all aspects of our opera-

tions," said Jeane Hull, Peabody's Group Executive for the Powder River Basin.

"These new busses represent our proactive efforts to provide safe and reliable transportation for our employees. We're excited to deliver this value-added benefit, which reflects our longstanding commitment to safety as a way of life."

**Buses transport
1,000 employees
with daily
roundtrip
transportation to
the North Antelope
Rochelle Mine**

Peabody achieved the safest year in its 125-year history in 2008, and the North Antelope Rochelle Mine operated more than 2 million employee hours during the year, setting records in both safety and

production.

Peabody Energy (NYSE: BTU) is the world's largest private-sector coal company, with 2008 sales of 256 million tons and \$6.6 billion in revenues. Its coal products fuel 10 percent of all U.S. electricity generation and 2 percent of worldwide electricity. **d**

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Cummins Spark-Ignited Generator Sets Comply With New EPA Emissions Standards

Cummins Power Generation, continuing its leadership in providing advanced emissions solutions, today announced that its spark-ignited gas generator sets are certified to the new exhaust emissions standards required by the U.S. Environmental Protection Agency (EPA).

Cummins Power Generation has received EPA 2009 emissions certificates for five spark-ignited generator set models, GGMA, GGMB, GGMC, GGHE and GGHF, ranging in size from 20 kW to 80 kW.

The EPA emissions regulation, marking an industry first, requires that generator set engines not certified from the manufacturer must be brought into compliance with the regulation by the owner or operator.

"Emissions regulations are complex and can add to the

cost of doing business as well as the worry of not being in compliance," said Henry Zeng, product manager, Commercial Generator Set Business, Cummins Power Generation.

Zeng added that this announcement reflects Cummins Power Generation's continuous aim to meet regulatory standards and a strong commitment to the environment. The EPA emissions certification for our spark-ignited generator sets is a great enhancement to Cummins' leadership in emissions compliance and technology.

Cummins Power Generation was the first to market with Tier 3 diesel generator sets. To maintain its market leadership with compliant spark-ignited generator sets, the company developed an emissions solutions package that delivers

reduced emissions, better performance and less complexity than before. Technical advances for the five EPA-certified generator sets include an electronic air-fuel-ratio (eAFR) control and an oxygen sensor to minimize exhaust emissions. The solution does not change the generator set's installation or footprint, however, so customers can continue using the installation process or design to which they are accustomed.

As the emissions leader, Cummins Power Generation develops its own emissions technologies and tests the emissions of its products' performance in accordance with the EPA regulations.

"This marks a major change in EPA regulations," Zeng noted. "Cummins Power Generation delivers the benefit of simplicity to our customers.

With a certified standby stationary generator set from Cummins Power Generation, the only responsibility of the customer is proper application and maintenance of the generator set. It's an extremely cost-effective solution for owners and operators."

For more information on the latest EPA emissions compliance for spark-ignited generator sets, visit

http://ecfr.gpoaccess.gov/cgi/tl?ext=/text-idx?sid=0e725d0608549e0bc999a67eb515e10a&c=ecfr&tpl=/ecfrbrowse/Title40/40tab_02.tpl

Cummins Power Generation, a subsidiary of Cummins Inc. (NYSE: CMI), is an industry leader in introducing advanced low-emissions power generation solutions around the world. With over 80 years' experience, the company's global distributor

network delivers innovative, reliable and cost-effective solutions for any power need, commercial, industrial, recreational, emergency and residential. Products include temporary or permanent pre-integrated power systems, combining generator sets and power control and transfer technologies. Services range from system design, project management, financing, and operation and maintenance contracts to development of turnkey power plants. For more information, contact Madeline Foss, Cummins Power Generation, 1400 73rd Ave. NE, Minneapolis, Minn. 55432. Phone: 763-574-5942; fax: 763-574-5298. Or visit www.cumminspower.com. **d**

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Coal Leader Education

Joy Mining Machinery's Mining Education Program



The Joy Mining Education Program includes an exhibit displaying machines mining coal, salt, trona, potash and gypsum, mineral samples and some of the products made from the minerals.

Joy's Mining Education Program has been presented to over 55,000 children and teachers in the United States ranging from kindergarten to college, since its inception in 2001.

The Mining Education Program involves trained JOY employees visiting schools of all grade levels for the purpose of informing students about the benefits of mining and the important role minerals play in their daily lives. Since the students learn practical informa-

tion about minerals, they are able to understand why the mining industry is beneficial to them.

School principals and teachers interested in finding out more about the Mining Education Program and having a JOY employee visit your school to tailor the program to your specific needs, should contact Michelle Schultz at email mschultz@joy.com or at phone number 724-873-4242. *d*

Virginia Tech's Powell River Project Research & Education Center and the Eastern Coal Council are sponsoring the 15th annual energy



education program, "PROJECT COAL TO ELECTRICITY: TEACHING - ENVIRONMENTAL ISSUES. Coal + Power Plants + Technologies = Clean, Dependable Electricity", for fourth, fifth, sixth and Earth Science teachers. The program covers the standards of learning for each of the classes listed.

The program is July 12 through 17, 2009 in Wise, VA at University of Virginia's College at Wise. The college is nestled in southwest Virginia in the heart of the Appalachian Mountains.

The program is for educators who are interested in teaching awareness and understanding of electricity, and its relationship to coal. There will be presentations from educators, geologists, mining engineers, elected officials, regulators, and industry leaders.

The program provides participants with hands-on activities. They explore the Powell River Project Research and Education Center and see how mined land has been restored for a variety of post-mining land

use options. They visit two underground mines (longwall and continuous mining operations), a surface mine, a coal



preparation plant, a coal laboratory, a coal-fired power plant, a state-of-the-art coal gasification facility, and mining equipment manufacturing plant.

For more information, visit the Eastern Coal Council's website: www.easterncoalcouncil.org *d*

CEDAR Programs in Central Appalachia

Kentucky, West Virginia and Virginia sponsor CEDAR programs where students are invited to enter coal projects in one of the following categories: Science, Math, English-Literature, Art, Music, Technology-Multi Media or Social Studies. The projects are judged in grade levels K-4, 5-8 and 9-12. These projects are displayed and judged at their school's local fair, with selected projects being invited to participate in the regional fair, where cash prizes are awarded to category winners, and additional cash prizes being awarded to the overall grade level winners.

CEDAR (Coal Education Development and

Resource of Southern West Virginia, Inc.) is an all-volunteer, not-for-profit corporation which began as a partnership between the coal industry, business community and educators.

CEDAR's mission is to facilitate the increase of knowledge and understanding of the many benefits the coal industry provides in daily lives by providing financial resources and coal education materials to implement its study in the school curriculum. Dates for the 2009 CEDAR programs are:

KY CEDAR: May 18 through 22

WV CEDAR: April 27 through May 1

VA CEDAR: April 21 through 24 *d*

Joy Mining Machinery Announces Scholarship Award Winners

Joy Mining Machinery proudly announces the recipients of the 2008-2009 JOY Scholarship Award. The JOY Scholarship Program is a continuing effort to attract and retain outstanding students to the mining and mining-related industries. Students receiving the awards are enrolled in schools of mining

engineering.

The 2008-2009 recipients are Jeffrey Hubbard, Bluefield State College; Michelle Harman, Colorado School of Mines; Brian Sandhaus, Missouri University of Science & Technology; Vance Rumbaugh, Pennsylvania State University; Matthew Robb,



Michelle Harman
Colorado School of Mines

Southern Illinois University-Carbondale; Sergey Pitman, University of Arizona; Matt Belcher, University of Kentucky; Parker Phipps, University of Utah; A. Scott Ross, Virginia Tech; and Adam Patterson, West Virginia University.

Joy Mining Machinery has more than 85 years experience

as a global leader in the development, manufacture, distribution and service of underground mining machinery for the extraction of coal and other bedded materials. *d*



Jeffrey Hubbard
Bluefield State College



Brian Sandhaus
Missouri University of Science & Technology



Vance Rumbaugh
Penn State University



Matthew Robb
Southern Illinois University-Carbondale



Sergey Pitman
University of Arizona



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- * WV Diesel Compliant Available



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