



coal energy

From the Mine to the Utility

Profile **Harold Quinn**

CEO of the National Mining Association

Feature:

Modern Coal Plants

Which are the most modern plants currently in use?

World News:

Australia

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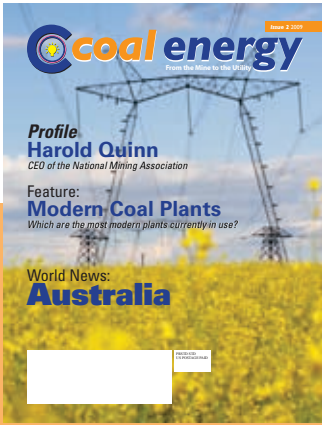
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letter from the publisher

Dear Readers,

Welcome to this new edition of Coal Energy. It's hard to believe we are half way through 2009 already. With a new year came a lot of new changes for the industry, and as we finally settle in to 2009, we take a look at some of the legislature affecting our industry.

In this issue, the Waxman – Markley Bill is discussed, and its issues brought forth. Keep a look out for our legislature blogs on coalenergyonline.com coming soon!

You can also meet Harold Quinn, read up about efficiency in the plants, and find out about our industry's most modern plants in use today.

As always, be sure to check out our list of submitted industry events for up-to-date conference dates to plan out the rest of your year. Also important, you can find included press releases and statistics. If you have any events, technical papers or story ideas for publish in our upcoming issues, please email maria@martonickpublications.com.

Finally, thank you as always for your continued support. Without our readers and advertisers, we would not be reaching four associations and 1200 mine sites. Thank you for your loyal readership and dedication to make Coal Energy a success.

Warmest regards,

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Association Comparisons

AMERICAN SOCIETY OF MINING AND RECLAMATION

Mission

ASMR, American Society of Mining and Reclamation, was established in 1983 to serve the mining and reclamation community as an outlet for scientific research and demonstration papers through our annual National meetings. These reclamation projects include activities associated with all kinds of drastically disturbed lands.

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Originated in: 1903
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AMERICAN COAL ASH ASSOCIATION

Mission

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NATIONAL MINING ASSOCIATION

Mission

NMA is the public policy voice of one of America's great basic industries whose primary mission is helping the nation realize the contribution made to our economic well-being and quality of life by resources derived from mining.

Originated in: Not listed

Dues: Not listed

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NATIONAL COAL TRANSPORTATION ASSOCIATION

Mission

The Mission of the NCTA is to provide education and facilitation for the resolution of coal transportation issues in order to serve the needs of the general public, industry and all modes of transportation. This is accomplished through the sponsoring of educational fora and providing opportunities for the lawful exchange of ideas and knowledge with all elements of the coal transportation infrastructure.

Originated in: Not listed

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Mission

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Originated in: 1982

Dues: \$2500

For more information:

www.americancoalcouncil.org

MODERN COAL PLANTS, CLEAN COAL TECHNOLOGY IN AMERICA

By: C. Nooriel Nolan 



Of the 617 coal-fired power plants in the United States, three have successfully utilized clean coal technology. According to the United States Department of Energy, the Tampa Electric Power Station, the Wabash River Repowering Project and the Great Plains Synfuels Plant, have led the way in implementing coal gasification technology.

The Great Plains Synfuels Plant was the first plant in the U.S. to successfully use clean coal technology. Begun in the early 1980s as a joint venture between the U.S. Department of Energy and the Dakota Gasification Company, the plant gasifies lignite coal. Located just north of Beulah, North Dakota, the plant has been converting coal into synthetic natural gas since 1984. Dakota Gasification Company (DGC), a subsidiary of Basin Electric, has owned and operated the Synfuels Plant since 1988. The plant operated successfully and



continuously until its 2004 planned shutdown, during which modifications were installed to increase efficiency and output of products. Productivity had increased by 41 percent as of April 2006, suggesting production methods improved significantly.

The Great Plains plant became the first coal energy facility to sequester its carbon dioxide in 1999. The Dakota Gasification Company then signed an agreement with PanCanadian Petroleum to utilize the sequestered carbon dioxide to recover oil from mature oil fields in Saskatchewan, Canada. Dakota Gasification Company continued its ground-breaking status in 2007 when it honored a 1988 agreement to share revenues from gas sales with the Department of Energy. DGC paid \$39.2 million to the DOE. The agreement is good through 2009.

With the start of the U.S. Department of Energy's (DOE) Clean Coal Technology program in the early 1990s, coal gasification became a focus. The program provided cost-sharing between industry and federal government for two IGCC plants in the United States. The U.S. Office of Fossil Energy describes the facilities as "pioneering gasification plants."

The Wabash River Coal Gasification Repowering Project in West Terre, Indiana, was the first full-sized commercial coal gasification plant. The Wabash River facility's Unit 1 (it has 6 units), built between 1953 and 1968, was retrofitted with coal gasification technology by Destec Energy in 1992. With \$219 million in assistance from the Department Of Energy, the 292 megawatt "integrated coal gasification combined cycle" (IGCC) power plant began operations in 1995. The project's goal was to "displace the 40-year-old, 90-Mwe pulverized coal fired Unit 1 PSI Energy's Wabash River Generating Station with an ultra-clean, highly efficient 262 MWe integrated gasification combined-cycle system." (DOE, NETL 2002 Project update). The IGCC facility was successful in using Global Energy's E-GAS™ technology to convert bituminous coal and petroleum coke into synthetic gas. The project was the first to operate General Electric's Frame7FA high temperature gas turbines using synthesis gas (syngas.)

Originally a joint effort by Destec Energy and PSI Energy, Inc, (now owned by Cinergy Corporation) as a DOE demonstration project, the plant and its tech-



nology has since changed hands several times. Dow Chemical Company developed the original gasification technology at the plant. At the onset of the project, it was transferred to the subsidiary Destec Energy, Inc. Dynegy acquired Destec in 1997. Global Energy acquired Dynegy, assets and technology, in 1999. Once Global Energy acquired the syngas technology, it expanded it to high-sulfur bituminous coals, and made advancements to ash and sulfur capture and conversion. This technology became known as Global Energy's E-GAS™. The project operated through Wabash River Energy, Ltd, a Global Energy subsidiary, until 2005, when a merger between Cinergy Corp and Duke Energy resulted in a new partnership. The Wabash River Coal Gasification Repowering Project (Unit 1) was then sold by Duke Energy to Wabash River Valley Power Association (WVPA) in January 2008. The syngas coal gasification plant is now co-owned by WVPA and SG Solutions LLC, a subsidiary of WVPA.

Tampa Electric's Polk Power Station was the first new coal plant built to integrate coal gasification with the "combined cycle" process of adding oxygen to the gasifier to produce gaseous fuel. Owned and operated by Tampa Electric Company, the plant converts pet-coke/coal blends and biomass into syngas using Texaco Development Corporation's gasification technology

and General Electric Corporation's combined-cycle technology. The 260 megawatt IGCC facility began operation in 1996. Forty miles southeast of Tampa, Florida, the plant uses natural gas and distillate oil to supply 75,000 homes with electricity.

The Polk Power Station has been dubbed "the world's cleanest" power plant. Not only does its gas cleaning technology remove 95 percent of sulfur from the coal gas, but in a recent agreement (2009) with Southwest Florida Water Management District and the City of Lakeland, Tampa Electric has established a project that will utilize 5 million gallons of reclaimed water for the Polk Power Station cooling system. The 30-year agreement maximizes water that would otherwise be released into Tampa Bay. This water recycling establishes a reliable water supply for the power station, and limits the need to withdraw groundwater in the future.

Tampa Electric worked with the federal government, state organizations, environmental groups and the local community to build a facility that was environmentally conscious and commercially useful. Because of this, the Tampa Power Station is truly the pioneer, leading the way toward a cleaner energy future.

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Rail Cant Measurement of Concrete Crossties

Part 1 of this article examined the mechanisms that cause rail seat abrasion on concrete ties. Part 2 looks at existing standards for concrete ties and the systems that can be used to measure their performance.

The Federal Track Safety Standards prescribe minimum track geometry and track structure requirements for specific track conditions that exist in isolation. Railroads are expected to (and generally do) maintain “higher” safety standards. Railways may prescribe additional or more stringent requirements so long as they are consistent with sound maintenance practices. The FRA’s Class 1 - 5 standards are prescriptive performance requirements that address the unique characteristics of fastener reliability, concrete crossties and roadbed stability. The current federal standard’s limitations for gauge, alignment and track surface combinations may be too moderate, however, and may not prevent poor performance of concrete crosstie support conditions.

Currently, crossties are evaluated (inspected) individually by the “definitional and functional” criteria set forth in the regulations. Crosstie “effectiveness” is subjective, of course, and requires good judgment in the application and interpretation of the standard. The “soundness” of a crosstie is demonstrated when a 39-foot track segment maintains safe track geometry and structurally supports the imposed wheel loads with minimal deviation. Key to the track segment’s lateral, longitudinal and vertical support is a strong track modulus, which is sustained by a superstructure (rails, crossties, fasteners, etc.) and high-quality ballast characteristics that transmit both dynamic and thermal loads to the subgrade. Proper drainage is also required to provide the necessary structural support.

As the use of continuous welded rail (CWR) has increased, and elastic fastener technology and concrete pre-stressing techniques have improved, the use of concrete ties has become more widespread. Concrete ties now represent approximately 20% of the ties installed on the major U.S. railroads. Concrete crossties with polygonal construction have been shown to transmit wheel loads better than wood crossties, but they are susceptible to damage or degradation under high impact loads.

While changes in climate have little effect on concrete ties, wet climates and incipient or noncompliant geometry may cause high-concentrated, non-uniform dynamic loading, which is usually applied toward the field-side of the concrete rail base. Repeated wheel loadings rapidly accelerate rail seat deterioration over a track segment (usually in a pattern of five or more crossties) when the padding material fails and the rail steel comes into direct contact with the concrete. As problematic as rail seat abrasion is, it is difficult to measure and detect. Better, automated technology and manual detection procedures, along with the development of performance specifications for concrete ties, are needed.

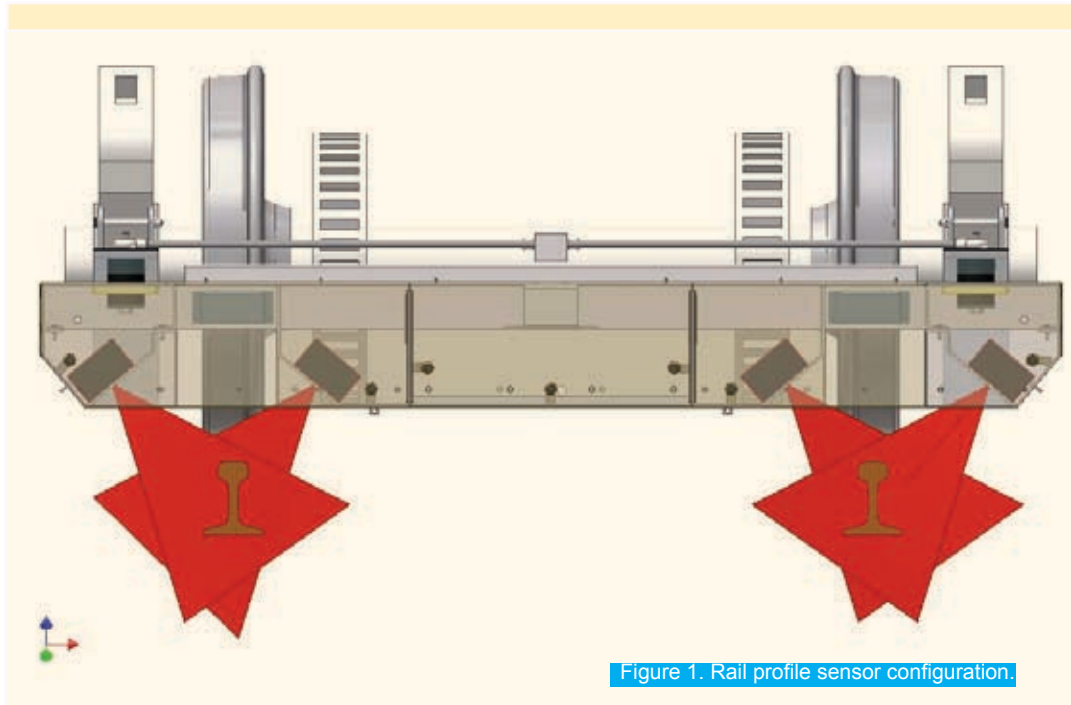


Figure 1. Rail profile sensor configuration.

The industry has developed and currently uses a number of automated inspection technologies and rail profile measurement systems to monitor track conditions. The FRA’s Rail Profile Measurement System (RPMS) uses sensor heads containing a fan laser and camera-based imaging system (similar to most rail profile systems in use today) to record a complete cross-section of both rails. The RPMS is comprised of a total of four sensor heads that are able to capture the gauge and field sides of each rail (see Figure 1). The cameras in each head record the profile of the incident laser beam on the rail, and data processing electronics in each head reduce the camera image to a series of several hundred x - y data points representing the rail profile. The x - y data for each scan is transmitted to a host computer where it is converted to engineering units, using scale factors derived from factory calibration and in-situ alignment information. The nominal scale factors, combined

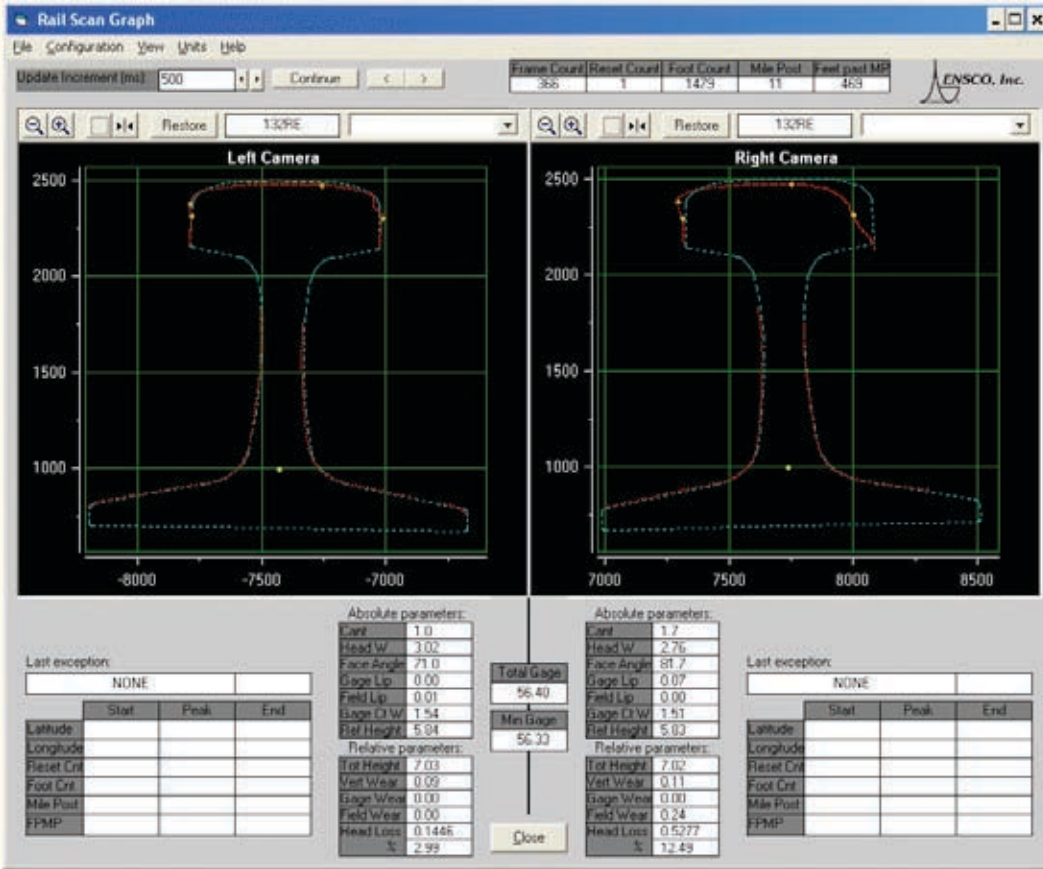


Figure 2. Rail profile software screen shot.

with the higher resolution quality of the cameras, provide for a system accuracy of approximately 0.04 inches.

Rail profile data is typically collected at approximately 15-foot intervals, but the RPMS is capable of collecting, recording and analyzing rail profiles at 1-foot intervals at speeds up to 160 mph. The RPMS identifies the rail type (section) by comparing collected profiles with templates of standard rail profiles. Once the rail type is identified, the RPMS outputs a set of absolute parameters, which are determined from the measured profile, and relative parameters, calculated by comparing the measured profile and the reference template. The absolute parameters include rail cant, rail-head width gauge-face angle, gauge side lip, field side lip, gauge-to-center width and reference height. The reference parameters include total height, vertical wear, gauge wear, field wear and rail head loss. Recorded profiles, reference templates and calculated values are all displayed and stored in real time by the rail profile software (see Figure 2).

Rail Cant Measurement

A concrete crosstie rail seat is described by the American Railway Engineering and Maintenance Association (AREMA) as a degree of slope (cant) designed toward the centerline of the crosstie. Accurate rail cant measurements can help identify potential problems at the rail / crosstie interface, such as rail seat abrasion, ineffective fasteners, plate cutting, missing or worn crosstie pads, and rail base / tie plate misalignment. Early

identification of deterioration of the rail / crosstie interface is critical to preventing gauge widening and, in extreme cases, the potential for a rail rollover derailment.

By itself, the RPMS cannot determine the amount of rail cant built into the rail / crosstie interface. The RPMS does, however, report cant in degrees as an angular variance from perpendicular to a line through the apex of both rails (see Figure 3). Since crossties are typically designed to cant the rail (1:40, or 1.4 degrees; 1:30, or 1.9 degrees, and 1:20, or 2.8 degrees) in the inward direction, the thresholds for left and right inward and outward cant can be reviewed independently or combined to include the angular difference relative to both rails. Most concrete crosstie track on U. S. railroads is typically designed with a 1:40 ratio that cants the rail in the inward direction 1.4 degrees toward the centerline of the crosstie.

The sign convention used by the RPMS conforms to the industry standard, i.e., the top of the rail rotating toward the gauge side represents positive (inward) cant, and rail rotating toward the field side represents negative (outward) cant. Figure 3 shows the current FRA definition of rail cant in which the left rail as viewed illustrates negative (outward) cant.

ATIP Rail Cant Exceptions

The RPMS onboard the FRA's Automated Track Inspection Program (ATIP) geometry cars uses a laser- and camera-based imaging equipment to measure left and right rail profiles, and is capable of reporting exceptions (POS<>NEG) in locations where cant exceeds a user-defined threshold. Starting with the measured rail profile and reference templates, the RPMS determines several parameters including rail section, rail cant, rail headwear loss and the amount of rail overflow (lip). The RPMS onboard the ATIP cars is fully integrated with the Track Geometry Measurement System, Ride Quality, and other onboard electronic measurement systems. Because of this, detected rail cant exceptions are tagged with GPS location information and are included in the Track Geometry Inspection Report and are consistent with other onboard measurements exception types.

On the FRA geometry cars, there are two tiers of thresholds, referred to as "alerts" and "alarms," which are used to identify

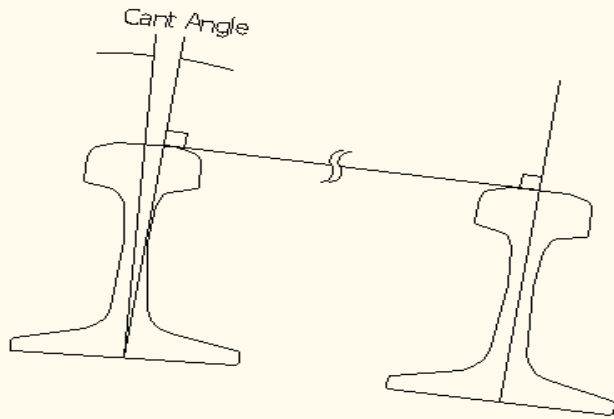


Figure 3. Rail profiling system cant definition.

“excessive” cant values. These levels are illustrated in Figure 4, where the yellow regions represent alerts and the red regions represent alarms. The thresholds are easily changed onboard the geometry car to adapt to crossties that orient the rail with different cants, i.e., 1:30 or 1:20 ratios. Table 1 shows the threshold values characteristically used during testing on the FRA ATIP cars and reported as advisories. Proper remedial action of the advisories identified through automated inspection relies on re-inspection in the field.

Ongoing Work

The Railroad Safety Advisory Committee, Track Safety Standards under task number 07-01 (concrete crosstie task force) has held several meetings since November 2007 to consider improvements relating to fastening rail to concrete crosstie. The work is ongoing with the following mission statement: The Task Force will consider all available scientific and empirical data or direct new studies to evaluate the concrete crosstie rail seat deterioration phenomenon and through consensus propose best practice, inspection criteria, or standards to assure concrete crosstie safety. The Task Force will develop definitions and terminology as required and disseminate pertinent information to detect through visual or mechanical inspection any safety concerns. The task force intends to issue a specific report recommendation to the committee by the end of 2008.



Figure 4. Rail cant exception thresholds.

Existing Regulatory Requirements

Crosstie regulations are contained in 49 CFR Part 213, Subpart D §213.109, which states in part:

- (a) Crossties shall be made of a material to which rail can be securely fastened
- (b) Each 39-foot segment of track shall have:
- (c) A sufficient number of crossties which in combination provide effective support that will,
 - i. Hold gauge within the limits prescribed in §213.53(b)
 - ii. Maintain surface within the limits prescribed in §213.63 and
 - iii. Maintain alignment within the limits prescribed in §213.55
- (2) The minimum number and type of crossties specified in paragraphs (c) and (d) of this section effectively distributed to support the entire segment; and
- (3) At least one crosstie of the type specified in paragraphs (c) and (d) of this section that is located at a joint location as specified in paragraph (f) of this section.

(d) Each 39-foot segment of: Class 1 track shall have five crossties; Classes 2 and 3 track shall have eight crossties; and Classes 4 and 5 track shall have 12 crossties, which are not:

- (1) Broken through,
- (2) Split or otherwise impaired to the extent the crossties will allow the ballast to work through, or will not hold spikes or rail fasteners,
- (3) So deteriorated that the tie plate or base of rail can move laterally more than 1/2 inch relative to the crossties; or
- (4) Cut by the tie plate through more than 40 percent of a ties' thickness.

Crosstie regulations are also contained in the High-Speed track safety standards under 49 CFR Part 213 Subpart G §213.335 (d) 1-7, which state in part:

- (a) Crossties shall be made of a material to which rail can be securely fastened,
- (b) Each 39 foot segment of track shall have,
 - (1) A sufficient number of crossties which in combination provide effective support that will,
 - i. hold gauge within the limits prescribed in §213.323(b)
 - ii. Maintain surface within the limits prescribed in §213.331; and
 - iii. Maintain alignment within the limits prescribed in §213.327
- (c) For non-concrete tie construction, each 39 foot segment of Class 6 track shall have fourteen crossties; Classes 7, 8 and 9 shall have 18 crossties which are not-
 - (1) Broken through,
 - (2) Split or otherwise impaired to the extent the crossties will allow the ballast to work through, or will not hold spikes or rail fasteners,
 - (3) So deteriorated that the tie plate or base of rail can move laterally 3/8 inch relative to the crossties,

- (4) Cut by the tie plate through more than 40 percent of a crosstie's thickness,
- (5) Configured with less than 2 rail holding spikes or fasteners per tie plate, or
- (6) So unable, due to insufficient fastener toeload, to maintain longitudinal restraint and maintain rail hold down and gauge.

(d) For concrete tie construction, each 39 foot segment of Class 6 track shall have fourteen crossties, Classes 7, 8 and 9 shall have 16 crossties which are not-

- (1) So deteriorated that the prestress strands are ineffective or withdrawn into the tie at one end and the tie exhibits structural cracks in the rail seat or in the gauge of track,
- (2) Configured with less than 2 fasteners on the same rail,
- (3) So deteriorated in the vicinity of the rail fastener such that the fastener assembly may pull out or move laterally more than 3/8 inch relative to the crosstie,
- (4) So deteriorated that the fastener base plate or base of rail can move laterally more than 3/8 inch relative to the crossties,

- (5) So deteriorated that rail seat abrasion is sufficiently deep so as to cause loss of rail fastener toeload,
- (6) Completely broken through; or
- (7) So unable, due to insufficient fastener toeload, to maintain longitudinal restraint and maintain rail hold down and gauge.

Acknowledgements

Special thanks to Kevin Kesler, Susan Cook, Eric Sherrock, and Gary Martin of ENSCO, Inc., and to the men and women on-board the ATIP cars for their everyday contributions to rail safety. Further information about FRA automated track inspection technology is accessible at <http://atip.fra.dot.gov/> or the FRA home page at <http://www.fra.dot.gov/>.

Arthur Clouse is Manager, Automated Track Inspection Program, Track and Structures Division, Federal Railroad Administration Office of Safety

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AKJ Company Profile

BY JESSICA WARSHAVER

AKJ Industries has been serving clients for over 25 years in coal mining, steel processing, refinery processing and specialty chemicals. AKJ attributes its success as an industry leader to its people, who have helped it provide services and products for dust control and cold weather material handling problems, hazardous waste to fuel conversion and alternative steel industry fuels.

James Marcrum, Chief Operating Officer (COO) of AKJ, says his company's corporate philosophy is 100 percent customer satisfaction all the time.

"AKJ was built on service, and even though we sell chemicals and provide other services, it's always been about doing whatever was right to make the customer happy," he says.

Most of AKJ's employees have worked for steel mills and coal mines for 10 years or more before coming to the company, and now most of those people have

been at AKJ for almost 10 years, he says.

"Our technology, sales and equipment people all came out of steel mills, coal mines or refineries, and we use them to go back into those same industries to do the jobs that are in our marketplace," Marcrum says. "We have a very experienced and seasoned force of people." AKJ is heavily involved in four organizations: AISI, ACC, NCTA and the Eastern States Blast Furnace and Coke Oven Association. In the last six months, AKJ has delivered major papers in AISI and the Eastern State Blast Furnace Association, and next month it is presenting at the American Coal Council, Marcrum says.

"We get to learn from each one of those organizations and we also get to educate our peers on what we do, how we do it and discoveries that we have made," he says.

Like many other industries, the general turnaround in the economy has become a formidable challenge, Marcrum says.

AKJ, a company that is largely dependent on heavy industry, has found the current climate difficult to overcome, he says.

"If they're not making cars, the steel mills don't make much steel; if they don't make steel, we don't sell as much product; if the mills don't buy coal, we can't sell the mines very much chemical either," Marcrum says. "It's just a cascading effect."

However, the future for AKJ looks bright, and the company is right on budget for 2009, Marcrum says. From haul road dust control to waste pond water quality; from underground dust control to cold weather material handling problems, AKJ Industries is perfectly suited to help mine operators increase their economic return on investment and enhance worker health and safety.

AKJ Industries, Inc. has a full line of products to fit the dust abatement and freeze conditioning needs, engineers to see that they are applied correctly and

monitors to track and record daily successes.

In the last few years, AKJ has introduced new technology to the industry for both dust control and freeze conditioning, Marcrum says. This revolution in technology is a line of EnviroGreen completely freeze protected dust control agents for process, underground and haul roads which eliminates the need to spray corrosive salt or messy petroleum

based products. AKJ's EnviroGreen line is safe for all metals and humans, too.

"Both of those new advances in technology are not only better than what they've replaced, but they're also totally renewable sources and 100 percent environmentally acceptable," he says.

Marcrum credits his personal success in the industry to the time he has put into it, he says. He received his undergradu-

ate degree in chemistry from Indiana University Bloomington and his MBA from Case Western University. He doesn't have much spare time, but he uses what little he has to play golf. He lives with his wife and has three children and five grandchildren.

Products

Car Top Binding And Rail-car Dust Control Products:

All of these products contain AKJ Industries unique SurfaceBond additive that provides the following benefits;

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3. SurfaceBond is a humectant and draws moisture from the atmosphere.
4. SurfaceBond is "regenerated" with the addition of moisture.

CTS-100C

CTS-100C is a concentrated blend of latex, surfactant and AKJ Industries SurfaceBond additive – it is to be diluted 10:1 with plant water prior to application. The advantage of this product is that it costs less on a per ton cost basis and requires fewer deliveries than our ready to apply CTS-100.

EnviroGreen 3000C

Is a concentrated blend of glycerin and AKJ industries SurfaceBond additive. It is designed to be diluted with water and the resulting solution applied at a rate of 4 pints to 8 pints of solution per ton of coal treated. The advantage of this product is that it will be less on a cost per ton basis and fewer deliveries will be required than our ready to apply EnviroGreen 3000. EnviroGreen 3000C solution adds approximately 670 BTUs per pint of solution applied.

FreeFlow FC-200C

Is a concentrated blend of organic freeze protection ingredients and AKJ Industries SurfaceBond additive designed to be applied at an application rate of 2 to 4 pints per ton. It provides both

dust control and freeze conditioning – this affords the mine the ability to apply product in the winter without application issues or creating problems with frozen coal. It may preclude the need for side release application. This product could be substituted for EnviroGreen 3000C in the summer months. FreeFlow FC-200C, applied as received, adds 6,050 BTUs per pint of solution applied.

EnviroGreen DC-2008FP

EnviroGreen DC-2008 and DC-2008FP is a major advancement in dust control technology. This unique, patented product combines the advantages of foam technology with the affordability of a WET program. Dust is a surface phenomenon, so our product was engineered to stay on the surface of particles to provide point of application dust control much like foam technology. EnviroGreen DC-2008, the "new age foam", resists being "wicked" into the internal surfaces of larger particles. This allows the product to actually treat dust rather than merely increase coal moisture. Unlike foam, it does not require air and readily disperses throughout the coal rather than simply blanketing the top of the coal stream. EnviroGreen DC-2008 does not stop there. The product offers a powerful binding feature that binds smaller particles to larger particles for downstream dust control. In addition, EnviroGreen DC-2008 is "reactivated" when additional moisture is applied or absorbed from the atmosphere. This provides significant advantages in dust control on storage piles.

RDC-20

EnviroGreen RDC-20 is a totally organic, hazard free product designed to control dust on haul roads for coal mines, quarries, construction sites, golf course

paths, etc.

It controls dust immediately on application and continues to draw moisture from the air to minimize dusting over extended periods between spray application. It also has anti-freeze properties and can be used during cold weather at below 32 degrees F.

AKJ also continues to provide our time tested non-SurfaceBond line up of products which include:

AKJ-100LX- Stockpile Sealant

AKJ-100LX is a concentrated blend of polymers and surfactants in a water base specifically formulated as a crusting agent for sealing stockpiles. The product is applied to the surface of storage piles in order to form a windproof, rainproof coating. When properly applied, coal storage piles treated with AKJ-100LX will resist wind and rain loss for 4 to 12 months. AKJ-100LX is recommended as a crusting agent for coal, coke, fly ash and tailings.

AKJ-852- Dust Suppressant

AKJ-852 is a proprietary surfactant blend used to control dust generated in the transport, conveyance, and loading of minerals. The surfactants in AKJ-852 improve the wetting characteristics of water by changing surface tension. When applied through a properly designed spray system, AKJ-852 will assist in the removal of respirable dust particles from enclosed work areas and prevent fugitive dust from reentering the atmosphere at downstream mineral transfer points. Proper use of AKJ-852 will lower respirable coal dust and quartz levels within OSHA and MSHA permissible limits.

AKJ-852 is effective on coal, metallurgical coke, petroleum coke, bauxite, fly ash, wood

chips, and various other materials.

RDS-78

RDS-78 is a concentrated organic emulsion designed to agglomerate aggregate fines into an asphalt-like surface. RDS-78 can be used as a road dust suppressant and also as a stockpile sealant. The product is non-corrosive, non-flammable, and environmentally safe. RDS-78 is non-water soluble upon drying and is biodegradable.

RDS-78 can be used for the following applications:

- dust control on unpaved roads
- petroleum coke storage pile sealing
- erosion control
- fly ash pile sealing
- coal storage pile sealing
- tailings dam sealing
- metallurgical coke storage pile sealing

Ice-Trol 941 Belt Deicer

Ice-trol 941 is a blend of inorganic and organic components designed to melt ice and inhibit water from freezing on belts. It should be applied to the belt surface in quantities sufficient to lightly cover the belt. Ice-trol 941 should be reapplied as needed to keep the belt surface free of ice. Ice-trol 941 will not harm the belt when used as recommended.

SCS-2000

Conveyor Deicer System SCS-2000 (patent pending). Use of this automated, temperature activated system can reduce consumption of Ice-trol 941 by as much as 50%, while reducing winter time labor costs.

Improvements in Coal-Fueled Power Plants

Research, planning and innovations are taking place in order to reach maximum efficiency for coal-fueled power plants.

BY DANIELLE A. PETERSON

The 19th century brought the generation of electricity using coal, and the first coal power station had an efficiency of about 1 percent. In 1910, efficiency rose to 5 percent, and by 1920 efficiency was at 20 percent.

Coal provides the United States with over half of our electricity, and to stay on this route, or progress, further improvements are needed to enhance power plant efficiency.

According to Michael Mellish, a coal analyst for the Energy Information Administration, coal-fired power plants really aren't the most efficient power plants in terms of converting btu's to kilowatthours.

For example, the existing fleet of U.S. coal-fired power plants has an average conversion efficiency of approximately 33 percent. Although this is low and about 67 percent of every unit of fuel is wasted, there are other methods of efficiency such as coal gasification, which has the potential to reach 70 to 80 percent efficiency.

"What really makes coal-fired electricity competitive in the U.S. power market is its relatively lower fuel price compared with other fuels such as natural gas," said Mellish.

According to the U.S. Department of Energy, electricity demand is going to increase within the next 30 years, and for coal plant efficiency to be at its peak, research and plans for innovations are taking place.

IEP Program

The DOE has an Innovation for Existing Plants Program, which will entail developing low-cost environmental compliance technologies, efficiency-boosting innovations and also planning technologies for an emission-free coal plant for the future.

The main program performance goal is to develop technologies capable of 90 percent carbon dioxide capture from the existing coal fleet that will also result in less than 35 percent increase in cost of electricity compared to existing plants without CCS. The DOE has already showed success with some projects, for example by sponsoring the Clean Coal Power Initiative, which met its goal by reducing emissions of nitrous oxide by 12 to 14 percent, increasing power plant efficiency of megawatt hours increased 1.5 percent and fuel efficiency improved by 0.7 percent, and also lowering costs.

The DOE has also deployed several advanced NOx control technologies, such as Praxair's oxygen-enhanced combustion and REI's ALTA NOx technology, onto coal-fired power plants.

3 Drivers for the Program

The National Energy Technology Laboratory lists three main reasons for the program. Environmental regulations have become more stringent over the years and because of air quality and environmental issue concerns, sulfur dioxide, nitrogen oxides and mercury will be addressed. Economic growth is another reason as within the last 30 years the amount of coal burned in the United States has doubled. And lastly, energy supply concerns regarding the long-term supply of affordable electric power point to increase use of coal in future.

The Fundamentals and Technicalities

Stephen Storm, executive vice president and combustion engineer of Storm Technologies, goes over the fundamentals in coal plant efficiency.

"Application of the fundamentals is essential and the most economical approach to optimizing efficiency," he said. "My favorite saying is, 'if you can measure it, you can manage it.'"

He describes efficiency measurement as a key indicator to the overall performance of today's typical steam generators and that the standards to optimization of performance should include these 13 essentials:

Essentials of Optimum Combustion for Low NOX Firing on a PC Fired Boiler:

1. Furnace exit must be oxidizing, preferably 3 percent.
2. Fuel lines balanced to each burner by "clean-air" test ± 2 percent or better.
3. Fuel lines balanced by "Dirty Air" test, using a Dirty Air Velocity Probe, within ± 5 percent or better.
4. Fuel lines balanced by fuel flows within ± 10 percent or better.
5. Fuel line fineness >75 percent passing a 200 mesh screen and <0.1 percent on a 50 mesh screen.
6. Primary airflow shall be accurately measured and controlled within ± 3 percent accuracy.
7. Primary air/fuel ratio shall be correct and accurately maintained when above minimum.
8. Over-fire air shall be accurately measured & controlled to ± 3 percent accuracy.
9. Fuel line minimum velocities shall be 3,300fpm
10. Mechanical tolerances of burners and dampers within $\pm 1/4$ " or better.
11. Secondary air distribution to burners within ± 5 percent to ± 10 percent.
12. Fuel feed to the pulverizers smooth during load changes and measured & controlled as accurately as possible. Load cell equipped gravimetric feeders are preferred.
13. Fuel feed quality and size should be consistent. Consistent raw coal sizing to the pulverizers is a good start.

IEP Focus: Reducing Reliance on Water and Mercury Emissions

When providing energy to the nation, it is important to protect U.S. water supplies because thermoelectric generation and fossil fuel extraction can impact water resources. Thus, part of the program is to respond to this challenge by developing and applying advanced technologies through integrated water and energy-related activities.

The DOE is also looking into developing technologies that will reduce mercury emissions from coal-fired power plants by conducting testing of mercury and enhancements to flue gas desulfurization technology to achieve greater than 90 percent mercury removal. It also hopes to reduce mercury emissions by conducting research on the fate of mercury in fly ash, scrubber solids, and other solid and liquid effluents from coal-fired power plants. With the IEP, more than 40 gigawatts of advanced mercury control technology will be installed on new and existing coal plants.

IEP Focus: Coal Gasification for Power Plant Efficiency

With coal gasification now being operated in the United States, this provides another wave of clean coal technology to aid in power plant efficiency.

The Energy Department's Office of Fossil Energy is working to enhance efficiency, environmental performance and reliability as well as expand the gasifier's flexibility to process a variety of coals.

According to the DOA, coal gasification power processes under development by the Energy Department could cut the

formation of carbon dioxide by 40 percent or more compared to today's coal-burning plant.

The coal gasification power plant is a dual source of electric power, which is called a "combined cycle." The process begins by coal gases being fired into a gas turbine to generate one source of electricity and then the hot exhaust of the turbine, and some of the heat generated in the gasification process is used to generate steam for use in a steam turbine-generator. In this type of cycle, fuel efficiency can be boosted to 50 percent or more.

Future gasification plants have the potential to reach 70 to 80 percent fuel efficiency if the remaining heat can be channeled into process steam or heat for nearby factories or district heating plants. The DOA states that future concepts that incorporate a fuel cell or a fuel cell-gas turbine hybrid could achieve efficiencies of nearly twice today's typical coal combustion plants.

Due to power plant efficiency of coal gasification, it is a promising technology for energy plants in years to come.

Change is Near?

Although the Annual Energy Outlook 2009 reference case forecast does not show that coal-fired power plant efficiency is expected to change much between now and 2030, conversion efficiencies for new nth-of-a-kind coal-fired power plants are expected to be significantly higher.

For example, conversion efficiencies are to reach 39 percent for new pulverized coal plants, 46 percent for new coal-fired IGCC plants, and 41 percent for new coal-fired IGCC plants equipped with carbon capture and storage technologies. Improving efficiency of coal-fueled power plants will play a crucial role on future energy and environmental needs.

tion by transferring industry to nations that don't regulate many emissions. The bill could provide another exotic financial instrument for Wall Street traders to make billions at the expense of the American public. The bill could further raise consumer prices by taxing low-cost imports that are essential to so many Americans. Finally, while the bill encourages carbon capture and storage, it does not provide the legal and regulatory framework to allow CCS, thereby supporting carbon storage but not enabling it.

Next steps: We urge the Senate to pass legislation that builds on the positives of the House bill and:

- Provides another kind of cap – a cap on the price of CO2 allowances that consumers would pay, to provide a

soft landing that would still allow the economy to grow;

- Offers timelines for emissions reductions that allow for development of needed technology;
- Creates a legal and regulatory framework that clearly allows carbon capture and storage and assumes federal responsibility for CO2 storage; and
- Prohibits duplicative and conflicting frameworks for greenhouse gas emissions at the state or regional level and at U.S. EPA.

Coal's Role: Coal has been the fastest growing fuel in the world for each of the past six years. The strongest economic growth engines of the world are in emerging Asia, and those engines are

coal-fueled. And coal fuels nearly half of U.S. electricity and represents more than 85% of America's energy resources. America is the Saudi Arabia of coal with more than a quarter of the world's coal reserves. The delivered cost of coal is routinely far less expensive than oil and natural gas.

Peabody supports continuous improvement in emissions toward the ultimate goal of near-zero-emissions from coal. We also believe that technology must be developed and deployed first to provide a realistic basis for determining appropriate limits that do not harm the American consumer, worker and family. That's the way America has always targeted emissions reductions, and the best way to meet the needs of all three "Es"... energy security, economic growth and environmental progress.

Foundation Coal Announces Settlement with ArcelorMittal and Updates Guidance

LINTHICUM HEIGHTS, Md., Jun 01, 2009 (BUSINESS WIRE)
 -- Foundation Coal Holdings, Inc. (NYSE:FCL) today announced that it has reached a settlement agreement ending litigation between Foundation and metallurgical coal customer, ArcelorMittal.

Under the terms of the agreement, ArcelorMittal has agreed to take delivery of significant volumes of metallurgical coal from the Kingston mine in 2009 and

future periods.

James F. Roberts, Chairman and Chief Executive Officer, commented, "We are pleased to be able to announce this settlement agreement with ArcelorMittal. The negotiated settlement agreement is fair to both parties, provides greater visibility and certainty to Foundation, and represents an important step forward in the relationship between the two companies which we hope will be long-lasting and successful going forward."

Foundation is updating its guidance as follows to reflect the impact of this settlement, newly contracted business and other changes.

ABOUT FOUNDATION

Foundation Coal Holdings, Inc., through its affiliates, is a major U.S. coal producer operating mines and associated processing and loading facilities in Pennsylvania, West Virginia, and Wyoming. Through its subsidiaries Foundation Coal employs approximately 3,000 people and produces approximately 70 million tons of coal annually, largely for utilities generating electricity. Foundation's corporate offices are in Linthicum Heights, Md.

FORWARD-LOOKING STATEMENTS

Certain statements relating to the future prospects, developments, business strategies, analyses and other information that is based on forecasts of future results and estimates of amounts not yet determinable are forward-looking statements (as such term is defined in the Private Securities Litigation Reform Act of 1995) which can be identified

Guidance			
	2009	2010	2011
Average per Ton Sales Realization on Committed and Priced Coal Shipments¹			
West	\$10.57	\$11.27	\$12.05
East²	\$62.06	\$74.85	\$82.92
Coal Shipments (MM Tons)³	70.0 - 73.0	70.0 - 74.0	70.0 - 74.0
West	53.0 - 55.0	52.0 - 55.0	52.0 - 55.0
East	17.0 - 18.0	18.0 - 19.0	18.0 - 19.0
Committed and Priced (%)^{2,4}	99%	75%	48%
West	100%	85%	57%
East	97%	44%	22%

1. Based on committed and priced coal shipments as of May 27, 2009.
2. In 2009, committed and priced Eastern tons exclude legacy contracts covering approximately 0.4 million tons of steam coal subject to indexed pricing anticipated to range from \$60 to \$90 per ton. In 2010, committed and priced Eastern tons exclude approximately 1 million tons of steam coal subject to collared pricing with an average pricing range of \$75 to \$84 per ton, as well as legacy contracts covering approximately 0.9 million tons of steam coal subject to indexed pricing anticipated to range from \$60 to \$90 per ton.
3. Coal shipments for the East and consolidated coal shipments exclude traded coal, and include approximately 0.5 million tons of purchased coal in each of 2009, 2010 and 2011.
4. As of May 27, 2009, compared to the midpoint of shipment guidance range.

as any statement that does not relate strictly to historical or current facts. The company has used the words “anticipate,” “believe,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “predict,” “project” and similar terms and phrases, including references to assumptions, to identify forward-looking statements. These forward-looking statements are made based on expectations and beliefs concerning future events affecting the company and are subject to uncertainties and factors relating to the company’s operations and business environment, all of which are difficult to predict and many of which are beyond the company’s control, that could cause the company’s actual results to differ materially from those matters expressed in or implied by these forward-looking statements. These factors include, but are not limited to: market demand for coal, electricity and steel; weather conditions or catastrophic

weather-related damage; the company’s production capabilities; timing of reductions or increases in customer coal inventories; long-term coal supply arrangements; environmental laws, including those directly affecting the company’s coal mining and production, and those affecting the company’s customers’ coal usage; regulatory and court decisions; railroad, barge, trucking and other transportation performance and costs; assumptions concerning economically recoverable coal reserve estimates; employee workforce factors; changes in postretirement benefit and pension obligations; the company’s liquidity, results of operations and financial condition. The company advises investors that it discusses additional risk factors and uncertainties that could cause Foundation Coal Holdings Inc. actual results to differ from forward-looking statements in the company’s Form 10-K filed with

the Securities and Exchange Commission (“SEC”) under the heading “Risk Factors”. The investor should keep in mind that any forward-looking statement made by the company in this news release or elsewhere speaks only as of the date on which the company makes it. New risks and uncertainties come up from time to time, and it is impossible for the company to predict these events or how they may affect the company. The company has no duty to, and does not intend to, update or revise the forward-looking statements in this news release after the date of issue, except as may be required by law. In light of these risks and uncertainties, the investor should keep in mind that any forward-looking statement made in this news release or elsewhere might not occur.

SOURCE: Foundation Coal Holdings, Inc.

Durbin And Illinois Delegation Members: *Futuregen Alliance Board Approves Agreement*

Plans for Advanced Clean Coal Plant in Mattoon Move Forward

[WASHINGTON, D.C.] – Assistant Senate Majority Leader Dick Durbin (D-IL) today commended the FutureGen Alliance Board of Directors for overwhelmingly approving the agreement that was recently negotiated between the Department of Energy (DOE) and members of the FutureGen Alliance.

“For nearly a year and a half, the people of Illinois have endured delays, reversals and disagreements over costs and funding of FutureGen. Today, patience and perseverance pay off – FutureGen at Mattoon is finally ready to move

forward.

“The agreement that was reached by the Department of Energy and the FutureGen Alliance is an historic moment for both our state and our country. In my time in Congress, I can’t recall a project that has greater promise and practical significance than FutureGen, not to mention the enormous economic benefit it will have in Illinois.

“I thank my colleagues in the Senate, Congressmen Johnson, Costello and Shimkus and the entire Illinois Congressional Delegation and the State of

Illinois for working with me to keep this project alive for the Obama Administration. We are not finished. We must continue to move forward, working with the FutureGen Alliance and the Department of Energy to take advantage of the \$1 billion in Recovery Act funding available for this technology.”

Congressmen Tim Johnson (R-IL), Jerry Costello (D-IL) and John Shimkus (R-IL) also commended the FutureGen Alliance and the Department of Energy for coming together to restart the FutureGen project:

“This is a positive development and fantastic news for Coles County, and if the promise of this technology holds true, the entire country,” said Johnson, whose 15th Congressional District includes Mattoon. “The people of Coles County and Illinois have invested their time and energy into this project over many years. It’s been a heartbreaking process at times but they have kept the faith, their leaders have maintained the momentum even when the federal government turned its back on them. This is a just reward, justified by the scientific community, the environmental community and the investment by Illinois and Coles County.

We will continue to monitor developments in the months ahead and do all we can to bring the promise of clean coal and our energy independence to fruition.”

“This is a very positive development and a testament to the hard work of our delegation, the resilience of the FutureGen Alliance and the support of the Obama administration,” said Costello. “As the Congress continues to debate a national energy policy, one thing becomes even more clear, and that is the need for a robust carbon capture and sequestration capability. FutureGen will help us bring this to fruition, and after attempts by the Bush administration to scrap the project, we are moving forward. This is good news for Illinois and great news for the nation.”

“I am very pleased that the FutureGen Alliance and the Department of Energy have reached this agreement. Since 2003, I have been supporting the construction of FutureGen in Illinois. The research at FutureGen will also help continue the use of coal as a reliable source of energy

in our nation’s future,” said Shimkus.

For seventeen months since the Bush Administration abandoned the FutureGen program, Durbin has spearheaded an effort in Congress to keep the project alive. He gathered support for legislation to protect and secure funding and organized countless meetings between the State of Illinois, the Illinois Congressional Delegation, the Department of Energy and the FutureGen Alliance so that everyone involved was ready to move forward on day one of the Obama Administration. FutureGen at Mattoon is now five years ahead of any other project, making it the best hope for rapid progress on large-scale integrated carbon capture and carbon sequestration.

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ROUTE TO A CLEAN ENERGY ECONOMY OR DEVASTATING EFFECTS?

The Waxman-Markey Bill: Some say it will put the United States on track toward a clean energy economy. Others see it as a threat to the economy.



By **Danielle A. Peterson**

On March 31, 2009, a 650-page draft of the American Clean Energy and Security Act was released by House Energy and Commerce Chairman Waxman and Energy and Environment Subcommittee Chairman Markey.

The Waxman-Markey Bill, which was passed on May 21st in Congress, plans to put America on a new track toward a clean energy economy.

“This legislation will create clean energy jobs that can’t be shipped overseas, reduce our dependence on foreign oil, and make America the global leader in energy technology,” said Markey, according to the Committee on Energy and Commerce Web site. “Our goal is to strengthen our economy by making America the world leader in new clean energy and energy efficiency technologies.”

Although the goals of the bill are to create clean energy jobs, save consumers money in energy costs and enhance America’s independence, the coal industry is not accepting the bill with open arms.

In a press statement on May 29th from the National Mining Association, President and CEO Hal Quinn said that the bill does not promote economic and energy security and that the NMA is in opposition to the bill.

“To be effective, climate change policies must address global emissions and accelerate the development and commercial deployment of advanced clean coal technologies such as

carbon capture and storage. The bill mandates sharp near-term emission reductions before this technology can be deployed. The result will be devastating losses of high-paying mining jobs, higher energy costs for businesses and the exporting of American business and jobs to countries that do not require similar greenhouse gas emission reductions,” said Quinn.

Before the bill was passed, Myron Ebell, director of energy and global warming policy of Competitive Enterprise Institute, stated that the bill will be the biggest tax increase in history and would destroy millions of jobs while only creating some jobs.

In an article by Ebell written before May 21st, he said “the carbon cap-and-trade program in the bill is an indirect tax. It would force energy users to buy phony, government-fabricated “carbon credits,” which are in reality ration coupons. Rationing would raise energy prices and thereby force consumers to use less energy. At the same time, it would expand government control over energy use and benefit companies that want to sell politically-favored fuels.”

Senior Policy Analyst from The Heritage Foundation, Ben Lieberman, said that this cap and trade approach is an effort to move American away from coal use by making it prohibitively expensive.

“The coal industry should be worried about its future,” said Lieberman.



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INDUSTRY EVENTS

RMEL

Safety Roundtable, **August 7, 2009, Fort Collins, CO**

2009 Fall Convention, **September 13-15, 2009, Kansas City, MO**

2010 Spring Electric Energy Conference Planning Session, **September 24, 2009, Englewood, CO**

NCTA

Fall Meeting & Conference, **September 14-16, 2009, Denver CO**

ACC

Coal Market Strategies, **October 12-14, 2009, Las Vegas, NV**

Coal Trading Conference, **December 7-8, 2009, New York, NY**

ACAA

ACI Fall 2009 Convention, **November 8-12, 2009, New Orleans, LA**

To include your organizations events in the next issue of Coal Energy, simply email info@martonickpublications.com with the information about your event. *Thank you.*



Procurement

Restructuring of the utility industry has caused power companies to reconsider their conventional ways of conducting business. They must now consider all options to reduce costs and redeploy capital. In response to these changes facing utilities, the NexGen Coal Services group provides a range of services

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Did You Know?



Surface Transportation Board

By Jessica Warshaver

The Surface Transportation Board was created in 1995 to replace the Interstate Commerce Commission (ICC), which was abolished after acting as a United States regulatory body since 1887.

The ICC was deemed ineffective due to deregulation and was charged with catering to the interests of the trucking industry. The agency's remaining functions were then transferred to the Surface Transportation Board, an economic regulatory agency created by the United States Congress to resolve railroad rate and service disputes and review proposed railroad mergers. Although the STB is an independent agency, it is affiliated with the U.S. Department of Transportation.

The STB has jurisdiction over railroad rate and service issues and transactions; certain trucking company, moving van and non-contiguous ocean shipping company rate matters; certain intercity passenger bus company matters; and rates and services of pipelines not regulated by the Federal Energy Regulatory Commission.

The agency's staff is divided into four offices. The Office of Public Assistance, Governmental Affairs, and Compliance (OPAGAC) serves as a channel through which the public can reach the STB. This branch is associated with members of

Congress, the public and the media to provide information about the agency's procedures, regulations and actions. The Office of Economics, Environmental Analysis and Administration handles administrative matters, environmental reviews of proposed STB actions in accordance with environmental laws, and economic and financial analyses of the railroad industry. The Office of Proceedings researches and prepares draft decisions, and the Office of General Counsel undertakes legal issues and defends agency actions in court.

The President of the United States appoints up to three members to the Board, and these nominees are then confirmed by the Senate and serve a five-year term in office. Francis P. Mulvey has served as acting chairman since 2004 and Charles D. Nottingham was sworn in as Vice Chairman in 2006.

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Profile on Harold P. Quinn, CEO of the National Mining Association

By: Jessica Warshaver

In September of 2008, Harold P. Quinn stepped up from his position as vice president and general counsel for the National Mining Association (NMA) and began his tenure as the association's president and chief executive officer. Quinn had previously served as senior vice president, legal and regulatory affairs and general counsel for the National Coal Association before its merger with the American Mining Congress that formed the NMA.

Quinn also gained experience in the government when he served as assistant solicitor with the Department of Interior and as a lawyer with the Department of Labor.

"In this town, that experience is very helpful," he says.

During the last few years, the NMA has succeeded in clarifying regulations that had kept coal mining permits tied up in the courts. Quinn said his association is devoting considerable effort to protecting this and other gains for the industry, like the recent action of the stream buffer zone rule and other 404 permit-related issues. These achievements may be marginalized or lost, he said, either in the courts or through regulatory or statutory action by the new Congress or administration.

Thus, Quinn said, the various organizations that oppose coal, coal electricity and clean coal technologies constitute a formidable challenge for the coal industry.

"The stakes are very high for coal in climate change policy," he said. "The key to getting climate policy right will be the role assigned to clean coal technology."

Quinn said the NMA has three objectives for itself and the coal industry. First, its enduring goal is to protect the public policy needs of its members and to guarantee a safe and vital domestic mining industry to meet the needs of the American people.

Its second objective is to ensure the new Congress and administration have a thorough understanding of the fundamental role of mining in re-building America's economy.

"Coal and minerals are the backbone of American manufacturing, job creation and U.S. competitiveness," Quinn said. "Coal provides half of America's electricity and is our most affordable, abundant and secure energy resource."

A third, long-term goal is to strengthen the culture of mine safety throughout the industry, Quinn said. The NMA has made substantial investments in mine safety during the last three years, and these investments have already begun to pay off—2008 was officially declared the safest year ever in the history of American mining.

"It's important that Congress and the new administration recognize our efforts and not undermine advances in mine safety with ill-advised policies," he said.

Quinn serves on the board of several energy-specific organizations, including the U.S. Energy Association, the National Energy Foundation and the American Coal Foundation. The Denison University graduate received his law degree from Wake Forest University. He is admitted to practice in North Carolina, the District of Columbia, before the United States Supreme Court and various federal courts around the country.

"While there is always more to learn, in the last three decades I've gained a good appreciation for the business and public policy needs of the industry and of how government tends to deal with them," Quinn said.



World News:

AUSTRALIA leads the way in clean coal technology; *Should America follow?*

By: C. Nooriel Nolan

If Americans were not aware of carbon capture and storage (CCS) technology, they are now. During President Obama's trip to Australia in March, he assured Prime Minister Kevin Rudd that America is dedicated to pursuing clean coal technologies. The two leaders, both in the primary stages of their terms, are setting off together down the "clean coal road" determined to change the way their countries, and the world, use coal. Their current focus is carbon capture and storage.

In April, Australia launched its Global Carbon Capture and Storage Institute, hoping it will be the catalyst for global communication regarding CCS projects and technologies. The goal is collaboration in order to find an international solution

to climate change. The GCCSI already has global support, with 85 members, including 16 national governments and 40 major companies (research institutes, coal associations, universities, banks, etc). The United States government is one of the primary members of the institute, demonstrating the new administrations' desire to pursue all options in the quest for clean energy. The Australian government has guaranteed \$100 million per year to the institute.

The GCCSI comes on the tail-end of major project failings in both the United States and Australia due to previous administrations' lack of funding. Current American controversy over FutureGen, the Department of Energy's zero-emissions project, centers around financial miscalculations on project costs. FutureGen was put aside by the Bush Administration due to high projected costs, after being restructured in early 2008, under the guise of developing a more "cost effective approach." In the new approach, the DOE was to join the coal



industry in building Integrated Gasification Combined Cycle (IGCC) clean coal plants, by funding CCS technology added to plants already under construction (due to be operational by 2015.) The project was ultimately suspended due to estimated costs. But the U.S. Government Accountability Office (GAO) announced this April that estimates were millions of dollars over actual production costs.

FutureGen was of particular interest to Australia, since its own zero-emissions project, ZeroGen, collapsed in May of 2007, for the same reason. The then Australian Resources Minister, Ian Macfarlane, claimed the project had deficiencies and therefore he was seeking support for other clean coal projects. Although this caused quite an upset, ZeroGen is not Australia's only clean coal initiative.

The Australian government has been aggressively investing in clean coal. Given that Australia is the world's leading exporter of coal, and that 51 percent of Australia's energy is produced using coal, it makes sense that the nation would invest in making coal a cheaper, more efficient and environmentally safe product. The GCCSI is only the most recent of Australia's clean coal efforts.

*The Coal21Fund, established in 2003, is a voluntary levy on coal companies based on production. It has brought federal and state governments, the coal and power industries, key mining and power sectors, and research organizations together in an effort to raise \$300 million toward projects reducing

green house gas emissions from coal. It has provided a means for the whole of Australian coal industry to communicate while raising funds for GHG abatement. It was the first such initiative to create this "whole-of-industry" approach to solve climate change. The Coal21 Fund led to the Coal21 National Action Plan in 2004, which established projects to test technologies such as carbon capture and storage, coal gasification, oxy-fuel combustion, and post-combustion capture and storage of CO₂.

Australia's current government, led by Prime Minister Rudd, has committed millions of dollars toward clean coal efforts. Its National Clean Coal Initiative, contains the National Clean Coal Fund, a \$500 million project designed to raise \$1.5 billion in private industry investment. Of the \$500 million, \$200 million is designated for clean coal projects.

Australia is leading the way in clean coal technology implementation. Victoria, Australia, is the working model for

carbon capture and storage. The Victorian government, through its Energy Technology Innovation Strategy (ETIS), is providing \$110 million in direct support to industry-led clean coal technology. Victoria's vast brown coal reserves, sufficient geosequestration potential, and \$170 million of government support gives it a unique position to excel in carbon capture and storage.

While the U.S. has many clean coal projects, the canceling of the FutureGen plant, originally scheduled for operation in 2012, was a major step backwards for U.S. clean coal energy. However, a new program has been released by the U.S. government. The American Recovery and Reinvestment Act was recently enacted and designates \$3.4 billion in federal funding for clean coal projects. This could create new opportunities for the advancement of clean coal in America.

The U.S. clean coal effort is moving along, albeit slowly. Within the Clean Coal Power Initiative, sponsored in 2003 by the DOE, Office of Fossil Energy, one demonstration project has been successfully completed. The project met its goal of reducing emissions (nitrogen oxide 12-14 percent), increasing plant efficiency (megawatt hours increased 1.5 percent and fuel efficiency improved by 0.7 percent), and lowering costs. But is the U.S. government doing all it can to advance clean coal technologies?

Collaboration between state and local governments and private industry seems a logical avenue to further explore. Such an effort was undertaken in the 1980s under President Ronald Reagan. The 1986 Clean Coal Technology Program, commissioned by President Reagan, was designed to share costs of future clean coal projects between the U.S. government, state agencies and private industry. The private sector contributed an unexpected \$3.2 billion to the project, meeting 50% of costs, while the federal government's funding equaled \$1.6 billion. Yet, only 1 of the 35 projects supported under this program has been completed. So, how much collaboration was really taking place?

Some U.S. state officials are actively pursuing more federal collaboration. In a letter to President Obama, Gov Bill Ritter of Colorado, Gov Dave Freudenthal of Wyoming and Gov Jon Huntsman Jr. of Utah stated, "taking technology from the laboratory bench to commercial-scale demonstration plants simply will not occur without a significant federal commitment of resources. Therefore, we are writing to urge you to thoroughly consider significant funding for federal-state-private efforts to construct new and retrofit demonstration clean coal facilities that use western coals..."

Australia has set the precedent of state and local governments successfully working together with the coal industry to advance clean coal energy. Should America be doing more to follow Australia's lead?

* Dollar amounts used to explain Australian projects are based on Australian dollars.

Most Requested Statistics - U.S. Coal Industry



	2001	2002	2003	2004	2005	2006	2007 r/	2008 p/
Production (1,000 Short Tons) *	1,127,689	1,094,283	1,071,753	1,112,099	1,131,498	1,162,750	1,146,635	1,171,483
East of Mississippi River ^{5/}	528,781	492,915	469,247	484,796	493,801	490,798	478,162	493,124
West of Mississippi River	598,908	601,368	602,506	627,303	637,697	671,952	668,474	678,359
Appalachian ^{5/}	432,919	397,214	376,071	390,875	397,363	391,911	378,956	391,161
Interior	146,890	146,622	145,992	146,038	149,165	151,389	146,668	146,725
Western	547,879	550,446	549,690	575,186	584,970	619,449	621,012	633,597
Refuse Recovery	1,754	988	989	990	696	752	1,156	1,362
U.S. Recoverable Reserves (Mil. Sht. Tons)	272,664	269,457	268,396	267,312	267,554	263,781	262,689	262,689
Recoverable Reserves at Producing Mines (Million Short Tons) ^{1/}	17,801	18,216	17,955	18,122	18,944	18,880	18,584	18,584
Total Value (\$1,000)	\$19,568,750	\$19,675,208	\$19,130,791	\$22,164,133	\$26,692,038	\$29,254,790	\$30,041,837	\$38,178,631
Consumption (1,000 Short Tons)	1,060,146	1,066,355	1,094,861	1,107,255	1,125,476	1,112,292	1,127,998	1,121,714
Electric Utilities/power	806,269	767,803	1,005,116	1,016,268	1,037,485	1,026,636	1,045,141	1,041,603
Other Power Producers	158,165	209,704	N/A	N/A	N/A	N/A	N/A	N/A
Coking	26,075	23,656	24,248	23,670	23,434	22,957	22,715	22,070
Other Industrial	65,268	60,747	61,261	62,195	60,340	59,472	56,615	54,536
Residential/Commercial	4,369	4,445	4,236	5,122	4,720	3,226	3,526	3,506
Stocks at End of Year (1,000 Short Tons)								
Consumers ^{2/}	146,012	148,870	127,190	112,855	109,333	150,398	158,781	171,891
Producer/Distributor	35,900	43,257	38,277	41,151	34,971	36,548	33,977	27,311
Exports (1,000 Short Tons)	48,666	39,601	43,014	47,998	49,942	49,647	59,163	81,519
Imports (1,000 Short Tons)	19,787	16,875	25,044	27,280	30,460	36,246	36,347	34,208
Price Indicators (Avg. \$/Short Ton)								
Value F.O.B. Mines ^{3/}	\$17.38 *	\$17.98 *	\$17.85 *	\$19.93 *	23.59 *	\$25.16	\$26.20	\$32.59
Cost of Coal at Electric Utility (delivered price)	\$24.68	\$24.75	\$25.72	\$27.30	\$31.22	\$34.09	\$36.06	\$41.23
Cost of Coking Coal at Coke Plants (delivered price)	\$46.42	\$50.67	\$50.63	\$61.50	\$83.79	\$92.87	\$94.97	\$118.09
Cost of Coal for Industrial Uses (delivered price)	\$32.26	\$35.49	\$34.70	\$39.30	\$47.63	\$51.67	\$63.44	\$54.42
Railroad Freight Charge (Frt. Rev./Tons Orig.)	\$10.21	\$9.93	\$10.06	\$10.64	\$11.68	\$12.70	\$13.50	\$16.16
Methods of Mining								
Underground (1,000 Short Tons)								
Continuous	180,337	163,343	160,763	175,723	177,757	175,034	173,500	179,107
Conventional	4,520	6,024	8,178	1,987	2,571	3,525	2,184	2,255
Longwall	195,304	187,766	183,523	187,948	188,053	180,463	176,106	181,797
Other	466	1,240	1,573	1,899	231	N/A	N/A	N/A
Total Underground Production	380,627	358,373	354,037	367,557	368,612	359,022	351,790	363,159
% of Total Production	33.8%	32.7%	33.0%	33.0%	33.0%	31.0%	31.0%	31.0%
Total Surface (1,000 Short Tons)	747,062	735,910	717,716	744,542	762,886	803,728	794,845	808,324
% of Total Production	66.2%	67.3%	67.0%	67.0%	67.0%	69.0%	69.0%	69.0%
Number of Mines (EIA)	1,478	1,427	1,316	1,379	1,415	1,438	1,374	1,400
Underground Mines (includes refuse)	719	682	602	586	606	612	579	600
Surface Mines (includes refuse)	759	745	714	793	809	812	795	800
Number of Mine Operations (MSHA)	2,144	2,065	1,972	2,011	2,063	2,113	2,030	2,122
Average Number of Miners Working Daily (EIA) ^{3/}	77,088	75,466	71,023	73,912	79,283	82,959	81,278	85,000
Underground Mines (includes refuse)	45,085	43,000	40,123	42,016	44,614	47,475	46,828	49,000
Surface Mines (includes refuse)	32,003	32,466	30,900	31,896	33,572	35,398	34,450	36,000
Average Coal Mining Employment (MSHA) ^{5/}	114,458	110,966	104,824	108,734	116,433	122,974	122,936	133,493
Number of Mine Injuries ^{4/}								
Fatal	42	27	30	28	22	47	34	30
All Injuries	6,299	6,039	5,168	5,129	5,182	5,249	4,881	4,789
Production Per Miner Per Hour ^{3/}	6.82	6.81	6.95	6.80	6.36	6.26	6.27	5.99
Underground Mines	4.02	3.98	4.04	3.96	3.62	3.37	3.34	3.17
Surface Mines	10.61	10.38	10.76	10.57	10.04	10.19	10.25	9.82

Notes:

p/ Preliminary estimates. r/ Revised. e/ Estimated. n/a Not available.

1/ At active producing coal mines. 2/ The residential/commercial sector not included.

3/ Excludes mines producing less than 10,000 short tons of coal during the year.

4/ Includes contractors and office workers. Excludes mines producing less than 10,000 short tons and prep plants with less than 5,000 employee hours.

5/ Includes refuse. 6/ Includes contractor employees.

* Starting in 2001 EIA is reporting only open market price. Prior years are the weighted average of captive and open market.

Sources: U.S. DOE/EIA, Mine Safety & Health Administration, Association of American Railroads, and NMA estimates.

Updated: June 2009



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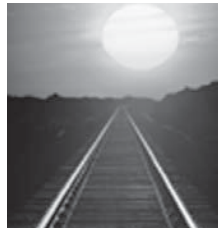
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Upcoming issue

Look for these stories coming up in Issue 3, 2009:

Past, present, future.

Past: Progression of coal cars

Present: World news : Coal in the U.K.

Future: Financing CCS

If you have any story ideas you would like to see in the next issue, please send an e-mail to maria@martonickpublications.com.



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