Issue 3 2009

coal energy

From the Mine to the Utility

Past, Present & Future

Profile
Thomas Adams
Executive Director of the American Coal Ash Association

Feature:
Financing CSS from WCI

World News:
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World Leader in **Composite Rail Ties**

TieTek LLC Composite Railroad Ties

TieTek LLC, subsidiary of North American Technologies Group Inc (NATG), has emerged as the world leader in the engineered composite railroad tie market. The Company's tie installations have proliferated throughout leading railroads in the United States and internationally.

TieTek ties have been under test at the TTCI rail test center in Pueblo, CO, for 10 years, and have seen over 1.5 billion ton miles of heavy load traffic, without any significant wear or plate cutting. The Union Pacific Railroad has been a major supporter of installing this technology and is aware of its value and benefits in rail operating and maintenance cost management.

TieTek also has installations in numerous mining and industrial applications throughout the US and internationally. TieTek ties are winning favor due to their extraordinary long life which creates exceptional value. Compared to competitive alternatives, TieTek's engineered product performs exceptionally well where heavy load and wet environments are encountered and especially where industry or government seeks a much more environmentally attractive alternative.

Additionally, Chicago Transit Authority, a leader in the transit rail industry, awarded **TieTek** a contract to supply over 63,000 crossties for the Chicago Transit Authority Blue Line Replacement Tie Project.
Alex Rankin, NATG's Chief Executive Officer said, "The supply agreement with the Chicago Transit Authority confirms the value proposition of the company's engineered composite ties for transit applications."

Unlike other ties made with alternative materials of construction (wood, concrete, steel), **TieTek's** composite crossties do not require cast-in fastening systems or unique installation equipment. In addition, concrete tie systems have been found to require significant maintenance during the life of the ties, particularly in heavy load, wet and muddy service.

TieTek(TM) uses patented technology to process recycled plastics, discarded tires, and other materials to manufacture an engineered composite product that is longer lasting and an environmentally benign alternative to hardwood, concrete and steel. Our ties have met or surpassed rigorous testing and performance evaluation methods, and have fully met or exceeded all performance criteria presented. TieTek ties bring innovative thinking, and **"Green Technology"** to track management. Railroads can realize Maintenance of Way and track performance improvements, while decreasing downtime and lowering track maintenance costs by using TieTek's proven, innovative, and long-lasting composite ties.

*Please visit **TieTek's** web site or call to discuss your application. We are a proven heavy load alternative, and our performance can potentially reduce your life cycle cost for your rail support infrastructure. We are committed to the mining and metals industry, and look forward to serving you.*

TieTek, LLC; wholly owned subsidiary of
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www.tietek.com

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Contact Information:
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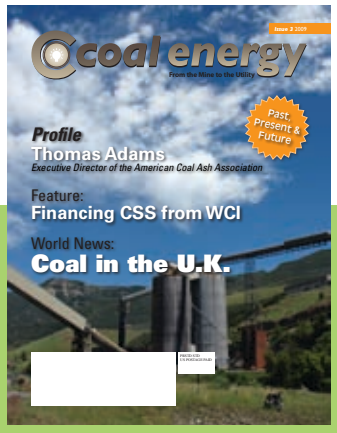
Tel: 972-819-3676



letter from the publisher

Dear Readers,

Welcome to our 3rd quarterly issue of Coal Energy for 2009. This issue is themed past, present and future. We start with the history of rail cars, brought to us by John Jennings from Lexair, Inc. Then, we touch on the progression of rail cars. Finally, a 3rd feature on financing CCS is brought to us by the World Coal Institute. I would like to take a moment to thank all of our contributing writers in this issue. Without you, Coal Energy would not be transforming into such a reputable source of information in the industry.

In this issue, we also meet Tom Adams, the new Executive Director of the American Coal Ash Association, and learn about his past in the cement industry. Many overlook the importance of the coal by-product industry in itself. It provides such a wealth of resources used across many other industries.

As always, I bring your attention to the current industry events for the latest information on conference dates and locations across the associations. Remember Coal Energy is the only publication that allows you to find the information for all 4 of the major coal related associations in one place. We are also the only publication to reach all four groups of members.

If there is anything particular you would like to see in the next edition of Coal Energy, from press releases to story ideas or technical papers, please email your thoughts to maria@martonickpublications.com.

Thank you again to all of our supporting advertisers. Coal Energy is pleased to announce beginning in 2010 a portion of all advertising proceeds will be donated back to the association of your choice. This allows the advertiser to take advantage of reaching all 4 associations, but also support the association(s) of your choice. Thank you to our advertisers for your feedback on this matter!

Also in 2010, our new website will be launched at www.coalenergyonline.com , and our 2010 directory will be published. We look forward to bringing you , the readers, these valuable sources of information.

Until next time!

Maria Martonick

Maria Martonick
President
Martonick Publications, Inc.

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 annual National meetings. These reclamation projects include activities associated with all kinds of drastically disturbed lands.

Originated in: 1983
Dues: $50 - $1000
For more information:
http://fp1.ca.uky.edu/asmr/

AMERICAN COAL ASH ASSOCIATION

Mission

The ACAA advances the management and use of coal combustion products in ways that are environmentally responsible, technically sound, commercially competitive and more supportive of a sustainable global community.

Originated in: Not listed
Dues: $1650 - $13500
For more information:
www.acaa-usa.org

RMEL

Mission

It is RMEL's mission to provide a forum for education and the sharing of ideas to better serve the electric energy industry and its customers.

Originated in: 1903
Dues: $200 - $3250
For more information:
www.rmel.org

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
For more information:
www.nma.org

AMERICAN COAL COUNCIL

Mission

The American Coal Council (ACC) is dedicated to advancing the development and utilization of coal as an economic, abundant/secure and environmentally sound energy fuel source. The Association promotes the lawful exchange of ideas and information regarding the coal industry. It serves as an essential resource for companies that mine, sell, trade, transport or consume coal. The ACC provides educational programs, advocacy support, peer-to-peer networking forums and market intelligence that allow members to advance their marketing and management capabilities.

Originated in: 1982
Dues: $2500
For more information:
www.americancoalcouncil.org

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
Dues: $1250
For more information:
www.nationalcoaltransportation.org

To have your coal industry association or organization included in the next issue of Coal Energy, please send information to info@martonickpublications.com.

Financing Clean Coal

Financing CCS – Pushing Deployment Forward

There is a growing recognition that technology developments have to be part of the solution to climate change. This is particularly true for coal because its use is growing in so many large economies, including China and India. In this article, the World Coal Institute highlights the potential role of coal with carbon capture and storage (CCS) in meeting the challenge of climate change and looks at the issue of financing CCS alongside other clean energy technologies.

Rising Energy Demand

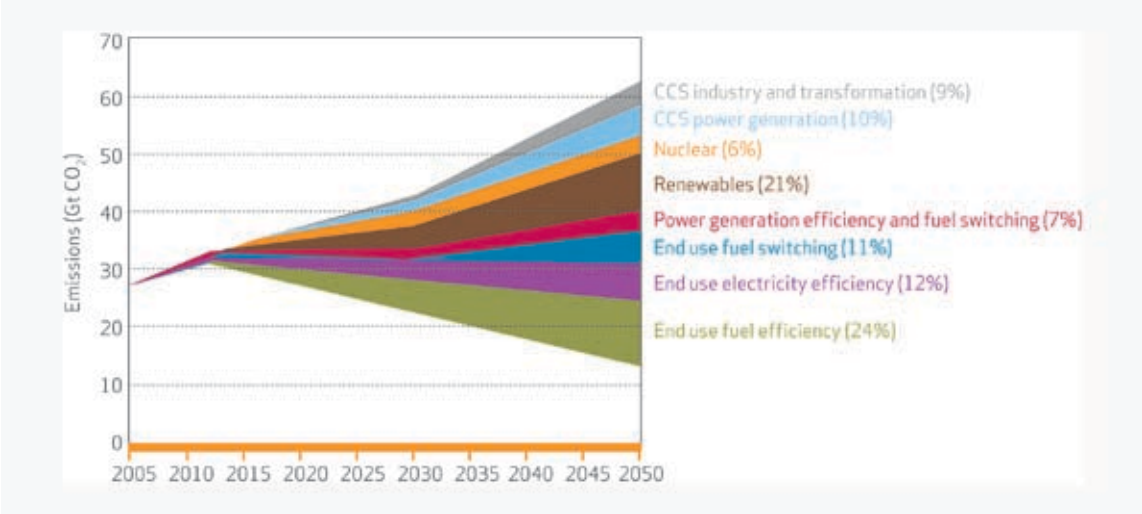
World primary energy demand continues to rise, mainly driven by the growing energy needs of developing countries. In recent years, coal use has risen at a rate of 4.9 percent per year; faster than any other fuel. Latest projections forecast energy growth to rise 45 percent between 2006 and 2030. Almost 90 percent of this increase is driven by the needs of developing countries, fueling economic growth and increased standards of living.

International climate change goals can only be achieved if emissions from fossil fuels are drastically reduced. While increasing how efficiently fossil fuels are used is important, CCS is the only currently available technology that can align the projected increased use of fossil fuels with climate change goals. The International Energy Agency (IEA) has studied a number of global GHG reduction scenarios and concluded that CCS is "the most important single new technology for CO2 savings" in both power generation and industry. The IEA found that attempting to stabilize emissions without CCS is estimated to be 71 percent more expensive, which is equivalent to $1.28 trillion annually in 2050.

Is CCS ready?

There are decades of operational experience from industrial-scale CCS projects, underground injection of CO2 for enhanced oil recovery, and the use of technologies analogous to CCS, such as natural gas storage. These industrial-level experiences are complemented by numerous research-scale CCS projects, intergovernmental and industry partnerships, research programs and stakeholder networks. While all the elements of CCS have been separately proven and deployed in various fields of commercial activity, a key step is the successful integration of large-scale CCS systems.

Figure 1: The Contribution of Technologies to Achieve a Global Reduction in Emissions of 50% by 2050
Source: IEA Energy Technology Perspectives 2008



Financing CCS

Current CCS deployment rates are too slow to allow global GHG emissions reductions goals to be achieved. The limited number of industrial-scale CCS plants currently operating globally is primarily a result of public policy expecting CCS to be delivered by the private sector, while at the same time failing to address the barriers that are inhibiting CCS deployment. Carbon markets, the primary current mechanism for driving emissions reductions, will not deliver CCS within the time period and at the scale needed. The current price of carbon in international carbon markets can only support low-cost CCS projects. The carbon price is too low to support the development of CCS projects in the power sector where the technology is most needed. Once the costs of CCS are lowered and carbon prices rise as caps on CO2 emissions become tighter, CCS will be supported by the price of carbon. In the meantime, it is necessary to identify alternative ways to support the wider deployment of CCS.

Significant investments are needed in CCS to allow the technology to play its critical role in global efforts to address climate change. CCS is expected to make a contribution to emissions reductions equal to or greater than that provided by renewable energy technologies (see Figure 1). However, current investments in CCS are tiny relative to the sums being invested in renewables. Annual investment in renewable energy technologies is estimated at over $100 billion per year - excluding subsidies. By comparison, current investments in CCS are only a fraction of this amount. The G8 group of countries has committed to having 20 CCS plants announced by 2010, with widespread deployment from 2020 onward. This is an important first step in the worldwide deployment of CCS. The cost of these projects is estimated at between $30 – 50 billion over the total lifetime of the projects – which, if financed over 35 years, will cost just 0.9-1.4 percent of what is being invested annually in renewables. This does not mean that investment should be shifted from renewables to CCS; rather, the world needs to invest greater sums of money to increase the use of all low-carbon technologies if climate change is to be successfully tackled. *(see Figure 2)*

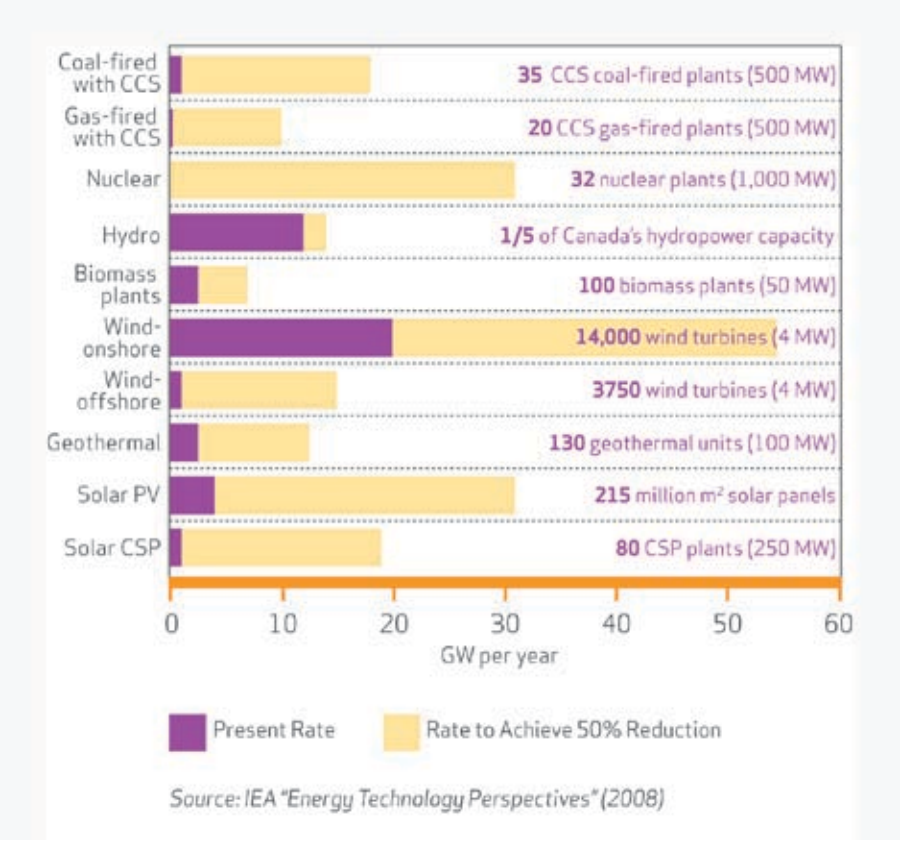


Figure 2: Average Annual Power Plant Investment Needed Between 2010 - 2050 to Reduce Emissions by 50% from Current Levels

The investment needed to commercialise CCS can be thought of as the 'learning cost' and is an upfront cost that will be borne only by the first commercial-scale projects. Importantly, the cost savings generated by CCS will be many times greater than the investment needed to address this learning cost investment.

Investing in CCS now will lower the cost of the technology - as installed capacity is increased and operational experience gained - enabling medium-term emission reduction objectives to be reached at lower cost. Although CCS is ready for deployment now, significant opportunities exist to lower costs, particularly for CO2 capture, which is commonly the most expensive component of

a project. Estimations show that, in the future, the costs of deploying CCS in the power sector could be reduced by almost half. Additional cost savings can be generated through economies of scale as larger CCS plants are constructed and opportunities to share CO2 pipeline networks and geological storage sites become available. Failure to widely deploy CCS will mean that alternative – and frequently more costly – low-carbon technologies will need to be deployed. (see Figure 3)

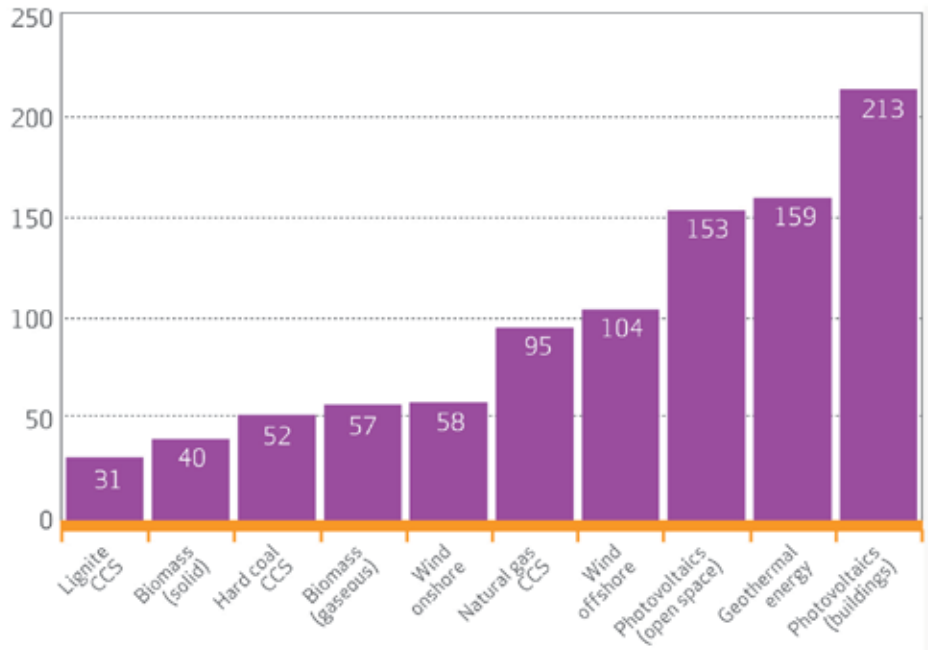
CCS is an emerging industrial sector and will provide significant sustainable development opportunities for countries that become leaders in this technology. The huge challenge of reducing GHG emissions and the central role that will be played by CCS means that the technology will become a very significant industrial sector rivalling many of today's largest sectors in size. Countries at the leading edge of international action on CCS will be well-placed to take advantage of this clean, sustainable energy technology and benefit from the skilled jobs and advanced technologies that the sector will generate. The post-2012 climate agreement must not include barriers to the deployment of CCS that would prohibit countries from using the technology, should they wish.

Action on CCS

Governments have taken a number of recent positive steps on CCS that are starting to show a willingness to extend investments in low-carbon technologies to carbon capture and storage. The US allocated $3.4 billion to CCS in its recent economic recovery package; the UK announced plans to introduce a mechanism to deliver up to four CCS demonstration projects, including both pre- and post-combustion coal projects; and Australia announced funding for 2-4 coal-fired CCS plants.

However, current deployment rates for all low-carbon technologies are inadequate, and investments must be increased substantially. Increased investment in technology deployment will generate emissions reductions and significant co-benefits that include improvements to the environmental and economic performance of technologies. These improvements will enable future emissions reductions to be reached at lower cost. Concerns that investing in CCS is diverting investment from other technologies such as renewables and energy efficiency are misplaced; all low-carbon technologies are required, and greater investment is needed for all.

For further information on CCS and coal, visit
www.worldcoal.org



Source: Mckinsey & Company "Costs and Potentials of Greenhouse Gas Abatement in Germany", Energy Sector Perspective, Berlin (2007)

Figure 3: CO2 Avoidance Costs for Power Generation Technologies (EUR/t of CO2)

History of Operation – Bottom Dump Hopper Coal Cars

By John Jennings

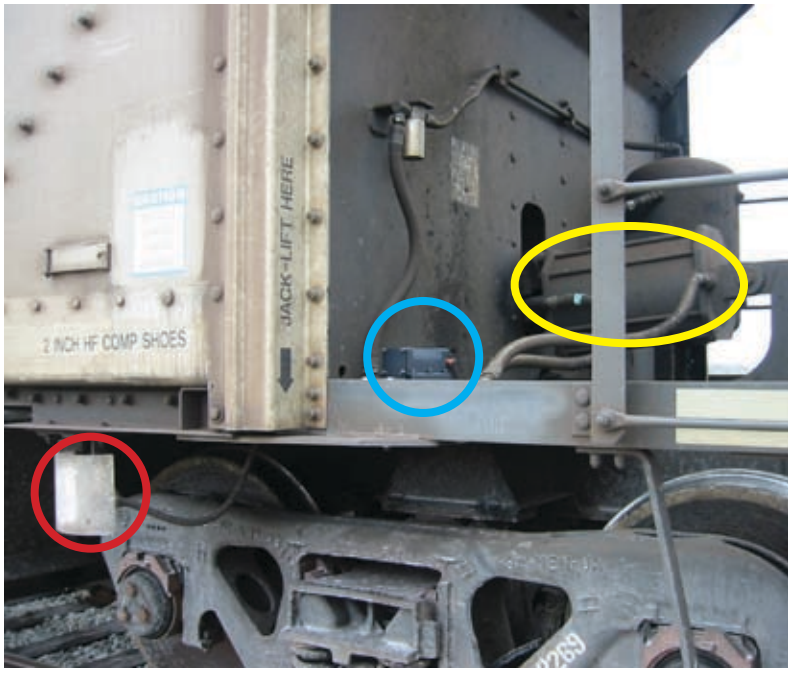
Through the years, there have been many methods employed to open and close bottom dump hopper cars. As far back as the late 1890s, there were commercially available car designs that used human strength to operate the door mechanisms. The idea of using human power to operate the hopper doors is still in use today. However, door system designs have vastly improved and door system manufacturers now feature more easily operated equipment that requires far less "brute strength."

Modern version of manually operated door system.

Human-powered systems are still in use today for a number of reasons. The number one reason is probably that the "take-way" capacity of the unloading facility can not handle two doors (or all of them) being opened at the same time. Opening each door individually allows for a gradual unloading of the car. Another reason for human-powered mechanisms could be local electrical regulations, which may not allow electrical signals to be used in an indoor or covered unloading facility. The third reason may be the initial cost of the cars themselves with automatic unloading capabilities plus the higher costs of building an unloading facility with enough capacity to handle unloading the whole car at one time. A fourth could be the costs associated with the inspection, adjustments and preventive maintenance of cars with automated systems.

During the 1960s, there was a push to move more and more coal and the automatic pneumatically actuated cars came into being. This type of car featured door mechanisms that were powered by large bore pneumatic cylinders instead of by human hands. The cylinder on the car is operated by a pneumatic directional control valve, which receives a signal from a short piece of rail (typically referred to as the "hot-rail") that contacts a "hot-shoe" or "pick-up shoe" mounted on the car.

Electrical operation of the dumping mechanism is achieved using pick-up shoes on either side of the car.



Typical automatic hopper car unloading system components: hot-shoe (circled in red), control valve (circled in blue) and cylinder (circled in Yellow)

The pick-up shoes are used to transmit the electrical signal that opens or closes the doors from the hot-rail to the control valve. When a positive (+) 24 VDC signal is present at the pick-up shoe and a negative (-) 24 VDC signal is present on the rail (on which the car is traveling), the signal to open the doors is routed through diodes in the valve's internal wiring that allows the "open" solenoid to actuate. When the doors are closed, the electrical signal is reversed. The pick-up shoe sees a negative (-) 24 VDC signal while the rail (on which the car is traveling) sees a positive (+) 24 VDC signal that is once again routed through the diodes to the "close" solenoid.

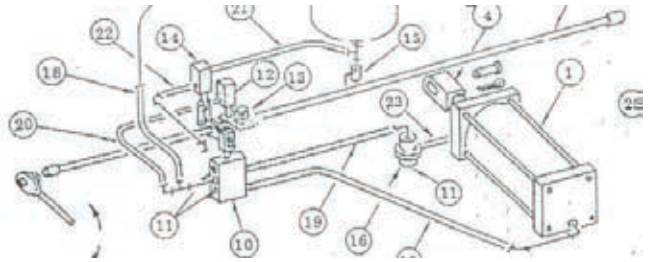
When the electrical signal is received by either the "open" or "close" solenoid of the control valve as described above, the following action occurs. Since these types of electrically operated dump systems have been in use (late 1960s through present), regardless of the brand or type of control valve used, all of them have been solenoid/pilot operated models. Although solenoid/pilot operated valve activation is initiated by an electrical signal, the actual shifting of the valve element is achieved by using air pressure in the system. The dump system air reservoir supplies pressure to the inlet port of the directional control valve. The same air is channeled into internal pilot pas-

sages in the valve that lead to orifices that are held closed via spring-loaded plungers inside the solenoids. When an electrical signal is introduced to either solenoid, the spring-loaded plunger is pulled off of its seat by electro-mechanical force, allowing air to fill a pilot chamber and shift the main valve element. The same plunger that is operated electrically can typically also be operated mechanically by depressing a manual override button. This allows for manual operation of the valve to either the "open" or "close" condition when no electrical signal is available.

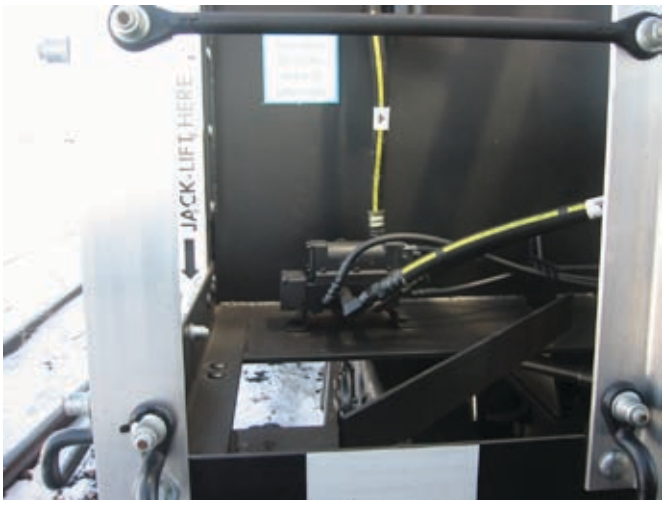
On the heels of the automatic cars described above came "hybrid" systems that used the pneumatic cylinder to do the actual work to actuate the door mechanism while the control of the system remained in human hands. Many different versions of these purely manual systems have been and still are being produced. Some of them utilize mechanical linkages of various sorts that often still require a moderate twisting, pulling or pushing action on the part of a person to operate while others simply require that a push button be depressed.

Typical manually operated mechanism that requires a twisting motion.

Typical older style push button operation



In addition to these types of purely manual operation, there are also traditional hot-shoe operated automatic systems that can be safely operated manually from either side of the car. The manual overrides on the main valve can be used from the control valve side of the car, and a secondary valve bank with two push buttons allows safe operation from the opposite side of the car. The main reason for this type of system is for when the electrically operated unloading equipment is not functioning or for when there is an electrical issue with the car itself. For these situations, personnel need not climb dangerously across cars to get to the manual override buttons on the main valve but should rather use the secondary valve bank to operate the car manually.



Main control valve with solenoids and manual overrides for operation from this side of car.

Secondary valve bank mounted on opposite side of car for manual actuation

Technology and new ideas for hopper car valves continues to advance. There have been a number of operational and safety related enhancements made to valves over the past several years. For instance, the Lexair Second Generation Rail Car Valves employ the some of latest technology found on control valves for use on automated or manually operated cars. One available no-charge option is the patented (U.S. Patents 7,093455 and 7,328,661) integral "safety check" feature, which prevents the Valve from being inadvertently shifted unless the pressure to it exceeds 40 PSI (more than the typical opening pressure required by the dump cylinder.) "Ticking time - bomb" situations are eliminated. If a dumping is going to occur due to vandalism or some other inadvertent action by untrained personnel, it will happen when and where the unwanted action takes place. Since the Valve can not shift until there is sufficient pressure to operate the opening mechanism, derailments due to inadvertent dumping of coal while in motion are eliminated. The patent pending sequenced mechanical lock/indicator assembly maintains the Valve in the "door close" position, regardless of outside forces or vibration. In addition, the indictor clearly shows whether the Valve is in the "door closed" position with the valve element locked in place or if it is in the unlocked or "door open" position.

As operational and technological advancements occur in other areas of hopper car systems, Valve technology is keeping pace. For instance, with the advent of ECP Brakes, the Second Generation Valves from Lexair stand ready to provide a link between the dumping system and the brake control system. The Valve can be fitted with a sensor that allows monitoring of the lock/indicator position through the ECP Brake control module, and one day perhaps the valve actuation for the unloading process may even be controlled through the control module as well. Who knows exactly where technology will take us?

Although the bottom dump hopper car is considered by most to be just a behemoth that is used to transport coal, there is a lot of technology that has been used in the manufacturing of it over the years, and there are still more technological advancements to come. For more information on any of the control systems discussed in this article or for more information on Lexair Second Generation Rail Car Valves, please contact John W. Jennings, V.P. of Sales and Marketing – Lexair, Inc.

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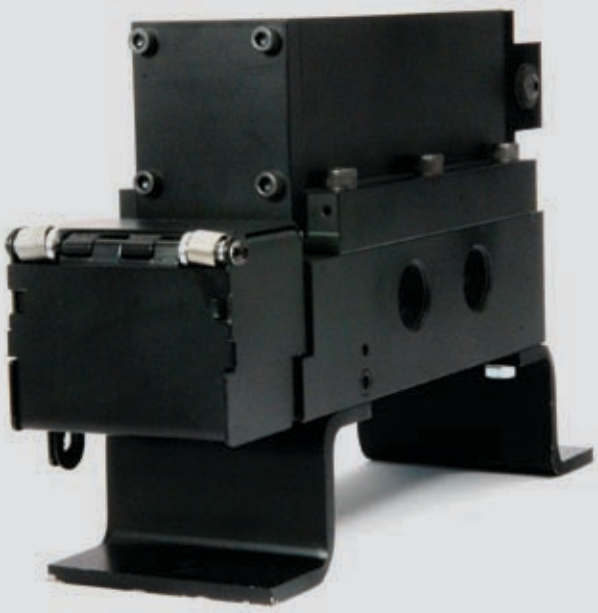
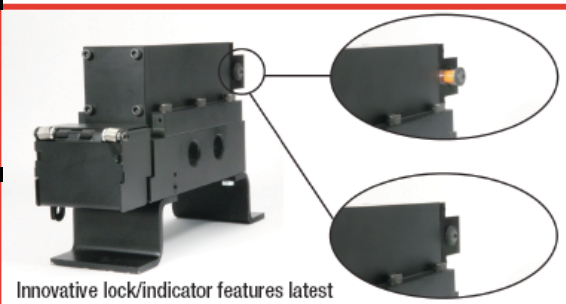
Ph:859-255-5001 **Fax:**859-255-6656





Innovative lock/indicator features latest Lexair, Inc. technology (Patent Pending).

Sequenced mechanical lock/indicator is clearly visible in the daytime when the valve is in the unlocked or "door open" condition. It can easily be seen in the dark at distances of 75 feet or more (when immersed with light from a flashlight) due to innovative reflective "glass-bead" technology which makes it "glow" bright orange.

Sequenced mechanical lock/indicator is not visible when the valve is in the "door close" and locked condition.

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Company Profile

By Jessica Warshaver

Martin Engineering is committed to educating its customers and the industry on conveyor safety. In fact, the first chapter of the fourth edition of its FOUNDATIONS Book is "Safety."

FOUNDATIONS, first published in 1991, discusses the Illinois-based company's philosophy: the way to improve the performance of belt conveyors is by controlling fugitive material.

"Martin Engineering has been a pioneer in developing the systems to reduce fugitive material—carryback, spillage and airborne dust—and we are the only ones who publish a book on why and how to do that," said Scott Hutter, President and CEO of the company.

Martin Engineering is focused on the belt conveyors used in handling bulk materials, like belt-training devices to help the belt run in the center and belt cleaners to take material off the belt. The company also offers engineered systems that are more a "project" than a "product," Hutter said. These include dust suppression and dust collection systems, air-supported conveyors and engineered-flow transfer chutes.

Its other main line is "flow aid products," which aim to improve the flow of material from storage and through processes, he said. These technologies include vibrators, air cannons systems and systems to improve the unloading of bottom-dumping railcars.

The company also offers a variety of field services to aid bulk handling operations that lack the resources to complete the tasks themselves. These services include installation and maintenance of belt conveyors.

Martin Engineering, founded in 1944, has grown internationally with business units in North and South America, Europe, South Africa and throughout Asia. These units manufacture the company's products to meet the needs of its marketplaces and customers. Its representatives strive to become expert in the materials-handling needs of the industries in their respective regions.

"In the Eastern USA, our representatives do a lot of work in underground coal mines; in the Western USA, our representatives are familiar with surface coal mines. In Germany, we know the lignite industry pretty well," Hutter said.

Recently, Martin Engineering has been developing new EVO Architecture in an attempt to cast out "old-school" traditional thinking that has generated some failings in belt conveyor operations, such as spillage, dust, maintenance difficulties and safety risks. The company hopes to solve these common problems by making conveyor systems maintenance-friendly so as to not risk injury of personnel and developing new conveyor architecture that reduces the accumulation of any material that has escaped so that conveyors are easier to clean.

"We design our products with safety at the forefront," Hutter said. "One of the things we do that we think is essential to working safely around conveyors is offer training in how and why conveyors work. Our FOUNDATIONS book is part of that effort."

About a year ago, Martin Engineering opened a $5 million research and development center for bulk materials handling, known as the Center for Innovation, at the company's corporate headquarters. The labs there analyze bulk materials and the materials used in making the equipment that handles these bulk materials, like steels, ceramics and urethanes.

"We are very proud of this great facility—the first in the industry—because it will let us develop the next generation of material-handling systems," Hutter said. "We are leading the way by putting science into the handling of bulk materials."

Hutter said the efficient use of coal is key to the energy independence of America. Those who participate in the coal industry need to do a better job of reaching out and addressing concerns that the media and interest groups have raised, he said.

"All of us in the coal industry and those industries that serve the coal industry must be certain to tell our story so that this great resource can be used wisely," Hutter said.

AMERICAN RAILROAD TRANSPORTATION: THE EVOLUTION OF THE COAL CAR

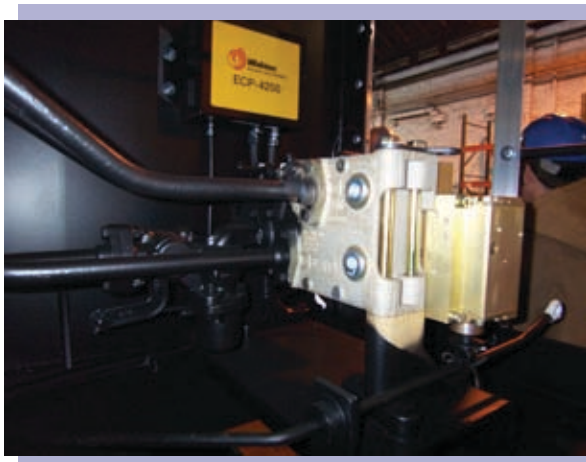
By: C. Nooriel Nolan

The coal car has been an important aspect of American life since its inception. Just as Americans relied on coal to heat their homes, they relied on the railroad coal car to transport that coal across the nation. From its humble beginnings as an open wooden cart, capable of hauling only a few hundred pounds of coal, to today's giant steel containers carrying coal by the tons, the coal car has been a crucial component of the coal industry.

The coal car can be traced back to the beginning of the railroad industry (1820s) and remains essential to American coal transportation. According to the Association of American Railroads (AAR), "railroads deliver more than 70 percent of all coal to coal-fired power plants--enough to meet the electricity needs of every home in America." Roughly nine out of ten tons of coal is used to generate American electricity. Therefore, railroad coal cars remain vital to America.

As the demands made on freight cars increase, the more sophisticated the technologies must become. Many technologies have been instrumental in improving railcar capacity, efficiency and safety. The following innovations are considered some of the most important advances made in the railcar industry.

Car Material/Construction: Coal cars began as open, wooden carts called "jimmies" (hoppers). Steel appeared in coal car construction in the late 19th century, though mostly as reinforcement for weak areas (such as sills and trusses). Coal cars continued evolving into larger, stronger, more capable versions of their predecessors as greater weights were expected. The coal cars of today are steel or aluminum containers that have significantly increased weight capacity. The stronger material allows the cars to carry 100-120 tons of coal. (Companies, such as Mitsui Rail and Trinity Rail, specialize in leasing aluminum coal freight cars.)



Brakes: The airbrake system, invented by George Westinghouse in 1869, was the invention that revolutionized railroad transportation. Westinghouse's invention allowed all railroad cars to be stopped simultaneously by the engineer rather than relying on individual brakes on each car operated manually by brakemen. This enabled trains to be stopped safely when traveling at higher speeds.

Today, Wabtec Corporation, the largest North American provider of technology-based products for the railroad industry, provides Electronically Controlled Pneumatic (ECP) braking systems for freight cars and locomotives. Their microprocessor and networking technology allows brakes to be applied to each car simultaneously, rather than being released from the locomotive in a domino-like command. This prevents the cars from pushing and pulling against one

another, decreasing braking distance and derailing. Hauling heavy steel containers full of coal requires a reliable braking system. "ECP dramatically improves braking performance by using an electronic signal to control the brakes rather than the age-old method of using subtle changes in brake pipe pressure."

Automated loading and unloading capabilities-Once the coal cars arrive at their destination, unloading the coal is the next step. Until the invention of the bottom chute, bulk material like coal was shoveled from open gondolas by several men. Two inventions remedied this back-breaking work.

Bottom discharge hoppers or gondolas have several chutes on the bottom through which coal is emptied. Bottom dumping hopper cars can have up to four drop chutes for coal dumping. Their interior floor is sloped to maximize the effect of gravity in emptying coal. FreightCar America, Inc., the largest North American manufacturer of aluminum railroad freight cars used to haul coal, claims to provide "the latest concept in Rapid Discharge coal car technology" through its aluminum hoppers with automatic unloading doors, aluminum bottom discharge coal cars and bottom dump hopper valves.

Components such as railcar valves ensure the quick, automatic, safe release of coal. Lexair, Inc. manufactures parts for coal cars, such as the 4-way directional control valve for automatic bottom dump hopper cars that prevents products, such as coal, from being dumped prematurely from the car (operational since 1960s).

According to Lexair's website, the valves possess "a 'sliding shoe' design to operate the directional control function of the valve. The "shoe" is shuttled from the door "open" to the door "close" position and back via a piston assembly powered by pneumatic pressure controlled through the solenoids or manual overrides."

Rotary car dumping is the process of rotating the entire coal car in order to dump the coal out. The dumper lifts the entire hopper or gondola car with the track and rotates the cars on the axis of the couplers. This is an alternative to bottom dumper cars. There are several advantages to rotary dumping, including greater volume, shorter dumping time, no danger of spilled material on tracks, and ability to unload wet or frozen coal (bottom dumper cars must wait for coal to dry/thaw before unloading). TrinityRail manufactures "a complete line of Rapid Discharge® coal cars," including rotary hoppers.

What will the future coal cars be capable of? Is there room for improvement? It appears the limits have already been pushed in railroad technology. "It would take a dramatic shift in how railroads operate--such as switching to 315,000 pound gross rail load limits from the current 286,000 pounds--to increase utilization," according to Mitsui Rail's David Kerr, director of marketing. But because railcar suppliers like Mitsui Rail stay ahead of the competition in customer service through pursuing the latest technology in coal car design, he hypothesizes future technological advances. Kerr anticipates "using lighter, stronger materials in conjunction with present-day materials, such as hybrid equipment that incorporates stainless steel with aluminum and carbon steel" in future coal cars.

Other individuals in the industry have their own predictions about the future of coal cars. Lexair Vice President of Sales and Marketing, John Jennings, foresees "advancements in maximum load carrying capabilities" and 'smart cars' that gather intelligence and relay it to the locomotive or to control centers thousands of miles away.

And then there is CargoRail™, a new system being created by MegaRail®, Transportation Systems Inc. The automated elevated train would be an alternative to traditional railroad shipping of cargo containers. CargoRail, built along railways or highways, would offer increased capacity, speed and safety. According to MegaRail®, the non-stop traveling speed of 75 mph would ensure faster delivery, decongested railroad and reduced rail accidents.

It is evident that coal transporting technologies will continue to evolve. Coal is crucial to America's immediate future, both for world trade and for domestic energy generation. Therefore, finding the most reliable, efficient, cost-effective transportation of coal will remain a priority for railroads, railcar builders and suppliers for years to come.

IN THE PRESS

Department of Energy Releases Record of Decision on FutureGen

Washington, D.C. — The U.S. Department of Energy (DOE) issued its Record of Decision (ROD) on FutureGen, representing an important milestone on the path toward to developing important technology to reduce emissions from coal-fueled power plants.

Recently, the DOE reached an agreement with the FutureGen Alliance to proceed with activities towards the construction of the first commercial-scale, fully integrated carbon capture and sequestration project in the country in Mattoon, Ill. That agreement included that DOE would issue a ROD by the middle of July, and that commitment has now been fulfilled.

The ROD is a final public decision that certifies the site meets environmental requirements for the project. The Environmental Impact Statement was completed in November 2007, pursuant to the National Environmental Policy Act of 1969 (NEPA), to assess the environmental impacts associated with the project. "Today's announcement from the U.S. Department of Energy is a major step forward on our journey to build the world's cleanest burning coal-fired power plant," said Illinois Governor Pat Quinn. "We will continue to work in strong partnership with the FutureGen Alliance, DOE and our partners to make FutureGen a reality."

FutureGen Alliance Chief Executive Officer Michael J. Mudd said the ROD is a welcome achievement in the Alliance's renewed partnership with DOE. "The Alliance appreciates Secretary Chu and his staff at DOE for all their hard work in accomplishing this important objective for the project," said Mudd. "We look forward to continuing to work together as we move forward on restarting design activities, updating the cost estimate and expanding membership in the Alliance so that the people of Mattoon, our nation and the world can reap the benefits of FutureGen."

Alpha Natural Resources and Foundation Coal Holdings Complete Merger, Creating One of America's Largest Coal Producers

ABINGDON, Va., July 31, 2009 /PRNewswire-FirstCall via COMTEX News Network/ -- Alpha Natural Resources, Inc. (NYSE: ANR) and Foundation Coal Holdings, Inc. (NYSE: FCL) announced today that they have completed their merger, creating one of America's foremost coal producers.

Stockholders of both companies approved the transaction at special stockholder meetings held today.

The new company, which will retain the name Alpha Natural Resources and continue to trade on the NYSE under the ticker symbol "ANR," becomes the third-largest coal producer in the U.S., with 2008 pro forma revenues of $4.2 billion. With the closing of the merger, Alpha now operates more than 60 coal mines and 14 preparation plants, maintains one of the most expansive geographic footprints in the industry, and controls reserves of more than 2.3 billion tons of coal.

Kevin Crutchfield, whose previously announced appointment to chief executive officer of Alpha Natural Resources becomes effective today, said, "This is an exciting day for our shareholders, employees and customers. With this merger, we have created a stronger, more

diversified company with the balance, size and scale to compete successfully in today's market environment. Our combined production, demonstrated marketing expertise and vastly enhanced reserve base, as well as our strong balance sheet and credit profile, provide a tremendous foundation to invest in future growth for the benefit of all our stakeholders." Effective with the completion of the merger, Michael Quillen, previously Alpha's chairman and chief executive officer, becomes executive chairman of the combined company; Kurt Kost, previously Foundation's president and chief operating officer, becomes president of the combined company; and James Roberts, previously Foundation's chairman and CEO, joins the combined company's board of directors.

In accordance with the terms of the definitive merger agreement announced on May 12, 2009, Foundation stockholders are entitled to receive 1.0840 shares of the new combined company for each share of Foundation common stock they owned at today's closing, and each share of Alpha automatically became one share of the new combined company. As a result of the stock-for-stock exchange, Foundation stockholders now own approximately 41 percent and Alpha stockholders now own approximately 59 percent of the new company on a fully diluted basis.

About Alpha Natural Resources

The merger with Foundation Coal positions Alpha Natural Resources as one of America's premier coal suppliers, ranked third-largest as measured by combined 2008 coal sales. Alpha is the nation's leading supplier and exporter of metallurgical coal used in the steel-making process and is a major supplier of thermal coal to electric utilities and manufacturing industries across the country. The company and its subsidiaries operate 61 mines and 14 coal preparation facilities in the regions of Northern and Central Appalachia and the Powder River Basin, with approximately 6,200 employees and 2008 combined revenues of more than $4 billion.

EPA's Moratorium on Coal Permits Threatens Region's Economy, Lacks Transparency- *September 30, 2009*

The National Mining Association (NMA), the Ohio Coal Association, the Kentucky Coal Association and the West Virginia Coal Association issued the following statement today after the U.S. Environmental Protection Agency (EPA) announced that all 79 pending permits for coal mining operations in Appalachia would be subjected to an "enhanced review" process:

"Today's decision by EPA underscores the grave concerns we have expressed since EPA's March announcement of a moratorium on coal mining permits," said NMA President and CEO Hal Quinn. "Coal mining throughout Appalachia cannot reassure thousands of anxious workers and their families, and we cannot plan for the economic future of our operations absent a workable, transparent process that provides certainty. Despite EPA's rhetoric, its actions thus far have failed these important tests. EPA's answer of more delay and study is at cross-purposes with our nation's need for affordable energy, investments and secure jobs."

"EPA is playing with fire," said Mike Carey, president of the Ohio Coal Association. "More importantly, the agency is playing with people's livelihoods. The implications of their delaying tactics will be felt throughout this state's economy," he added.

"EPA's hit list was compiled by people in Washington who are entirely insulated from the consequences of their actions and far removed from the families and communities affected by them," said Bill Caylor, president of the Kentucky Coal Association.

"People all over West Virginia can't believe this is happening," said Bill Raney, president of the West Virginia Coal Association. "They don't understand why Washington is willing to kill off good-paying jobs when our economy is still on the ropes and the unemployment rate is still unacceptably high."

This announcement by EPA condemns scores of mining operations and thousands of high-wage mining jobs to further uncertainty for several more months, said coal officials. Today's list of permits withheld for additional review continues a moratorium on coal mining permits that began with EPA's March 24 decision to stop the Army Corps of Engineers from processing 150 pending permits while it subjected a handful to a new, but unspecified, review criteria that still has not been made explicit, even to the Corps. As a result, a growing backlog of about 250 permit applications throughout the eastern United States continues to await action by the federal government.

Peabody Energy Opens Representative Office in Indonesia

ST. LOUIS, Oct. 8 -- Peabody Energy (NYSE: BTU) today announced it has opened an office in Jakarta, Indonesia, to expand business development and coal sourcing opportunities to serve the fast-growing Pacific markets.

"Indonesia is the world's largest source of export thermal coal," said Peabody Chairman and Chief Executive Officer Gregory H. Boyce. "The company's presence in Jakarta expands our ability to serve India, China and other key Asian markets. The Pacific markets are driving global demand for coal and are expected to achieve 5 to 10 percent compound annual growth over the next five or more years."

India is the world's fastest-growing coal importer and could be short as much as 200 million tons of coal in the next five years. China is the world's largest coal consumer and has been importing coal at a record pace in 2009.

Peabody's Jakarta office will be led by Reynard Hanoppo, who joins Peabody after more than a decade of managing sales for PT Kideco Jaya Agung, Indonesia's third-largest coal producer. Hanoppo has a Bachelor of Science degree from the London School of Economics and Political Science. He will report to Peabody's Managing Director of Asian Trading Phillip V. Smith.

Peabody serves nearly 330 customers in 21 nations on six continents and has trading and business offices in China, Australia, the United Kingdom, Venezuela, Singapore, Indonesia and the United States. Last year, Peabody nearly doubled its EBITDA contributions from global trading and brokerage activities. Peabody Energy 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.

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SOURCE Peabody Energy

Management of the Wheel/ Rail Contact Interface in Heavy-Haul Operations

By Huimin Wu and Semih Kalay

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Wear and rolling contact fatigue (RCF) of rails and wheels are common problems under heavy-haul operations. Increasing axle loads can increase the capacity of a railway system, but it can also increase the stress state of the system. A root cause of RCF and excessive wear on rails and wheels is the high energy input into the wheel/rail interface, indicated by high levels of contact stress, tangential forces and creepages (1, 2). Reducing the energy input into the wheel/rail interface is a key strategy to reducing wear and RCF.

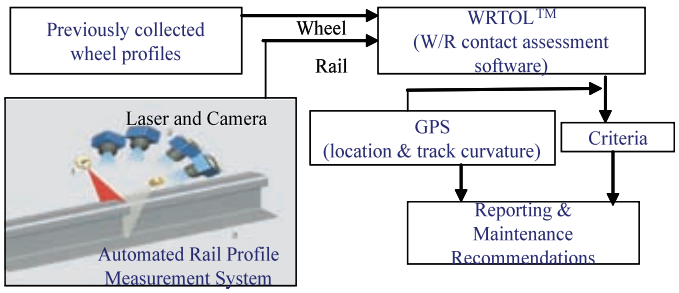

Figure 1. Illustration of the WRCITM system

Wheel/rail contact conditions significantly influence vehicle performance, wheel/rail wear and the formation of RCF. To manage the wheel/rail interface, wheel/rail profiles and wheel/rail contact conditions must be measured and analyzed, and wheel/rail maintenance practices must be carefully controlled.

A wheel/rail contact interface management technique that has been developed and applied in North American heavy-haul service includes three major elements:

— Development of an automated wheel/rail contact inspection system for conducting system-wide wheel/rail contact inspection.
— Identification of undesired wheel/rail contact conditions causing vehicle performance problems and excessive wear and RCF on both wheels and rails.
— Guidance for wheel and track maintenance to correct the identified wheel/rail contact problems.

This technique applies the fundamentals of wheel/rail contact computation to the evaluation of wheel/rail contact from a systematic point of view.

Wheel/Rail Contact Inspection System

The Transportation Technology Center, Inc. (TTCI) developed an automated wheel/rail contact inspection (WRCITM) system (3) under the Association of American Railroads' Strategic Research Initiatives Program. Figure 1 illustrates the data measurement and processing flow of the WRCITM system. This measurement system can be installed on a railway car, as shown in Figure 2. The WRCITM can perform real-time assessment of wheel/rail contact conditions, using rail profiles that are measured by the system and compared to pre-collected wheel profiles from more than 200 representative wheelsets. The pre-collected wheel profiles, which are drawn from cars that normally travel over the route being inspected, have varying degrees of wear. A GPS system is used to correlate the rail measurements to the track locations. The operating speed is proportional to the measurement interval and currently reaches 70 km/hr with a measurement interval of 3 meters. Track

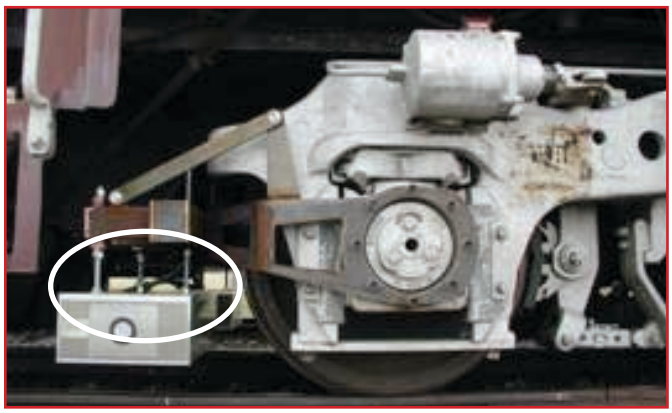

Figure 2. Rail profile measurement system (circled)

curvature, wheel loads and track gauge are taken into consideration in the assessment. The likely effects of wheel/rail contact on vehicle performance are predicted based on assessment results. Wheel/rail contact conditions can be quickly assessed

in order to provide an overall view of wheel/rail contact conditions on a system and determine the need for rail reprofiling.

In the WRCITM system, the wheel/rail contact parameters are assessed by placing each wheelset profile that is stored in the database on each measured pair of rails. The wheel profiles are moved laterally, relative to the rail profile, and the program calculates the following contact parameters:
— Contact positions on each rail.
— Maximum contact angle.
— Rolling radius difference on curves.
— Effective conicity on tangent track.
— Contact conformity.
— Contact stress.

Contact position is particularly important, as it detects the contact position on the low rail in curves, and the risk of rail rollover derailment. Figure 3 shows that 38 percent of the wheels used in the inspection contacted the inner rail on a curve at a point more than 55 mm from the rail gauge. The WRCITM system produces an exception alert if this contact pattern continues for a specified distance — 30 meters, in this instance.

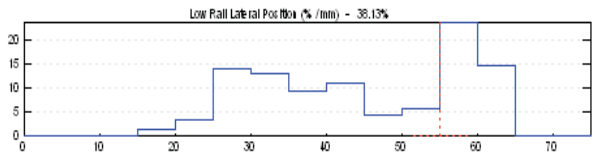

Figure 3. Low rail contact position

The maximum contact angle relates to the risk of flange climb derailment. A low contact angle can be caused by rail rotation due to weak track or fastening system. A low contact angle can also be caused by wheels contacting rail at the rail lip, as shown in Figure 4, which can lead to poor vehicle curving performance.

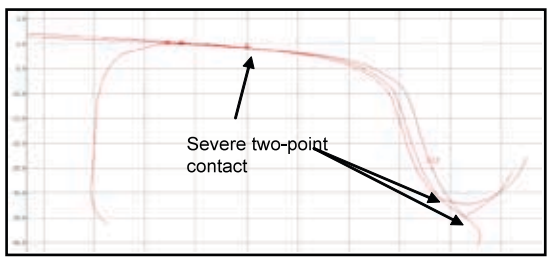

Figure 4. Wheels contact rail at rail lip

Contact conformity and rolling radius difference provide an indication of vehicle curving performance under prevailing track conditions. Contact conicity indicates vehicle lateral stability at high speed. Contact stress and its distribution provide an indication of wear and risk of RCF.

Exception reports are produced for the track sections (specified in both distance and GPS coordinates) where pre-defined criteria have been exceeded and where distances exceed user-defined lengths. Information on track curvature and measured rail gauge are also included in the exception report.

Tangent Track Inspection

The WRCITM system was used to examine how rail profiles and track conditions contribute to hunting under one type of loaded grain car on specific lines. The system showed that wheels on some of these cars were worn to shapes that produce high-contact conicities when contacting certain rail profiles.

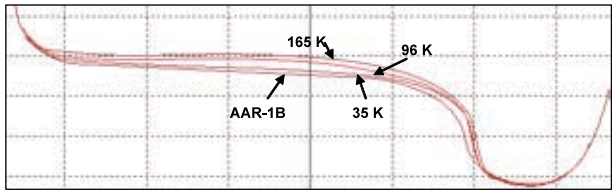

Figure 5. Wheel profile overlay

Wheel/Rail contact conicity (λ) is defined by Equation: $\lambda = \Delta R/2y$ (4), where ΔR is the rolling radius difference of two wheels on an axle and y is the wheelset lateral shift. Higher values of conicity lead to a higher risk of vehicle lateral instability. Wheel/rail contact conicity is affected by wheel/rail profile shapes that affect the value of ΔR and the clearance between wheel flange and the rail gauge, which affects the value of y.

Table 1 shows the distribution of wheel profiles used to assess the measured rail profiles. The wheel profiles, which were taken from loaded grain cars (with more than 256,000 kilometers of service) that demonstrated lateral instability, demonstrated a tendency to produce higher contact conicities when contacting certain rail profile shapes. Other wheel profiles were taken from other 286k grain cars; service mileages were estimated from their service records.

Because of the asymmetric wear on some of these wheelsets (and the possibility that they could contact either rail depending on the cars' orientation), the 108 measured wheelsets were mirrored to produce a database with a total of 216 wheelsets. Figure 3 shows an overlay of typical profile shapes from each group of wheels.

Inspection Results

An inspection identified the track sections and rail profiles that produced high-contact conicities when contacting certain worn wheel profiles. Figures 6 and 7 show the inspection results for 30.4 km of tangent sections of a heavy haul line. The nominal operating speed on this line is 88 - 112 km/hour, depending on the car types. About 25,000 pairs of rail profiles were measured on the tangent track sections. The Y-axis of Figure 6 indicates the percentage of total rail pairs measured in

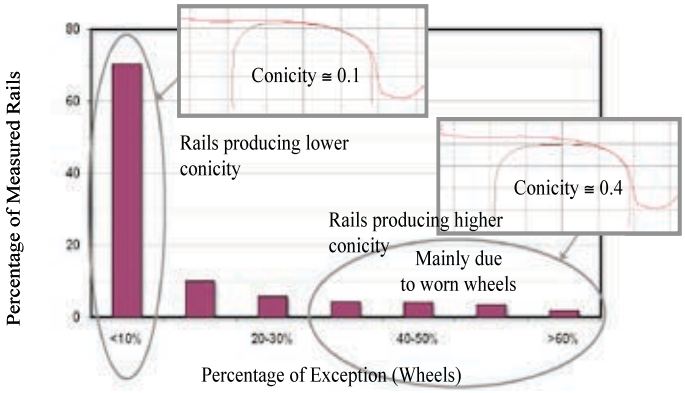

Figure 6. Distribution of contact conicity, conicity threshold = 0.35

the tangent track sections. The X-axis denotes the percentage of wheels that exceeded the conicity threshold limit of 0.35, which was selected based on loaded car lateral instability tests conducted at TTC. (The tests concluded that the wheelset conicity of the grain car must be in excess of approximately 0.4 to develop loaded car lateral instability within prevailing operating speeds (5)).

In Figure 6, the bar of <10 percent indicates that 70 percent of the rails contacting the wheels in the database caused less than 10 percent of the wheels to exceed the 0.35 threshold conicity value. In other words, more than 90 percent of the wheels (new and worn) contacting 70 percent of the rails produced conicity values below 0.35.

Only about 13 percent of the measured rail profiles (summation of last four bars circled in Figure 6) in this section of track contacting the wheels in the database caused more than 30 percent of wheels (last four bars in Figure 6 notated from > 30 percent to >60 percent) to exceed the 0.35 threshold conicity value. Therefore, these 13 percent of rails had a tendency to induce loaded car lateral instability.

Figure 7 shows the locations of the rails that produced higher contact conicities in this section of track. The distance axis

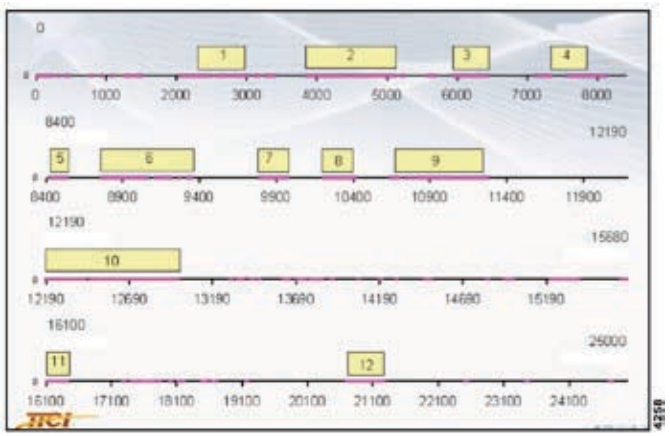

Figure 7. The locations of track that produce contact conicity above 0.35

shows the measurement numbers in sequence, with a distance interval of 2 meters. The dots show all rails that produced higher contact concities. The numbered blocks show the track sections where a large percentage of the rails produced conicities above 0.35. Subsections 7, 8, 10, and 12 are likely in need of maintenance, because they had a high percentage of exceptions over longer distances (see Table 2).

Figure 8 shows the percentage of all measured rail profiles that exceed the conicity threshold values between 0.25 and 0.5 for the same section of tangent track using the 30 percent wheel exceedance criterion. The results give an overall view of contact conicity of this track.

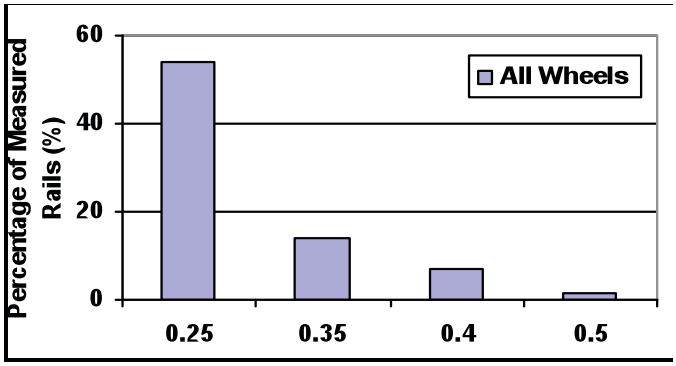

Figure 8. Distribution of contact conicity

Huimin Wu, is Principal Investigator; Semih Kalay, is Vice President Research & Development, Transportation Technology Center, Inc.

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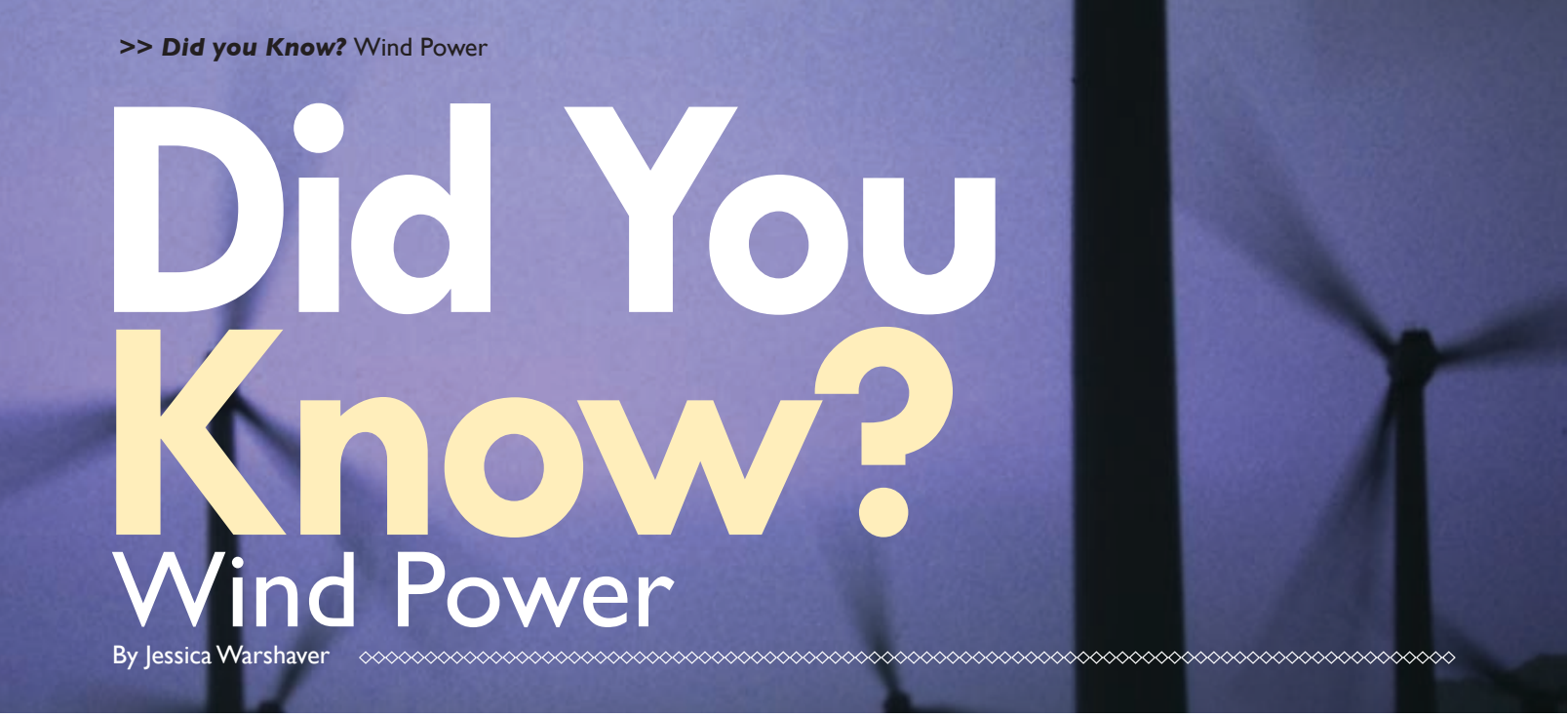

Did You Know?

Wind Power

By Jessica Warshaver

Wind power is quickly becoming a fashionable green alternative to power production. The United States recently passed Germany to become the highest producer of wind power in the world, and the Department of Energy has even estimated that wind power could account for 20 percent of the nation's electricity supply by the year 2030. Last year, almost 2,700 residence-sized wind units were sold nationwide, according to the American Wind Energy Association.

The popularity of this medium can be attributed to the renewable and clean nature of wind as opposed to fossil fuels. Wind turbines also produce no greenhouse gas emissions.

Despite the recent advancements in wind energy, it currently accounts for just 1 percent of our country's electricity use. Its main problem lies in the unpredictability of the wind, which requires backup power plants to pick up the slack. In addition, wind often blows the hardest in remote areas, far from the populated cities that need it most.

Building wind farms over water is gaining momentum as a way to address these issues. This is expensive, but wind blows much harder offshore. Denmark already boasts an offshore wind farm, and in the United States, Massachusetts is gearing up for a large farm called Cape Wind.

Wind farm developers still have some kinks to work out. One big issue is the detrimental impact turbines have on wildlife. Developers are experimenting with techniques to reduce bird and other wildlife injuries, such as building turbines around migratory patterns and temporarily shutting down turbines during migration.

No matter what solution manufacturers and developers conceive, the main issue always comes back to the need for a backup energy source: coal. China, the smoggiest country on Earth, wants renewable energy like wind to meet 15 percent of its energy needs by the year 2020. The country's plan to build huge wind farms requires that dozens of new coal-fired power plants be installed as well.

In fact, any country with a growing demand for energy and an existing dependence on coal power will face a similar dilemma. Large cities in our country have floated proposals to install wind energy units, such as Chicago's plan to format the famous Sears Tower with turbines.

So, how many wind turbines would it take to power New York City?

The city's 2007 plan, the Long Island Offshore Wind Park, would have installed 40 large turbines in an 8-square-mile area located four miles offshore. Those windmills would have produced 435,000 megawatt hours a year, which means 115 of these parks with 4,600 turbines would be required to fulfill New York City's power needs. These windmills would cover a 920-square-mile area, more than three times the city's size.

Under perfect, gusty conditions and using the most powerful turbine in the world, the Enercon E-126, New York's energy demand would require 2,500 turbines at a total cost of $52.5 billion to install.

Although the industry has some strides to make before wind power takes over, it has hope that the economic stimulus package passed in February 2009 will aide the development process due to its production tax credit for three years, as the previous one-year tax credit hindered the ability to make long-term development plans. Only time will tell if this new green technology will dominate a fifth of our nation's power supply by 2030.

Industry Events

RMEL

Safety Roundtable, **February 26th 2010, Lakewood, CO**

2010 Spring Electric Energy Conference, **May 16th 2010, Santa Fe, NM**

NCTA

Spring General Conference, **April 11-14, 2010, San Antonio, TX**

O & M Conference, **June 14-16, 2010, Coeur D'Alene, ID**

Fall Meeting & Conference, **September 13-15, 2010, Denver, CO**

ACC

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

2010 Spring Coal Forum, **March 2-4, 2010, Clearwater, FL**

2010 Coal Market Strategies, **October 5-7, 2010, Tucson, AZ**

ACAA

ACAA Winter Meeting, **January 26-27, 2010, Nashville, TN**

Britain's Low Carbon Commitment

By: C. Nooriel Nolan

Sir Nicholas Stern of the United Kingdom's HM Treasury finance department prepared a report in 2006 titled The Economics of Climate Change in which he claimed CO2 e (carbon dioxide equivalent) levels needed to be reduced 60 to 80 percent in developed countries by 2050. In early 2007, the Intergovernmental Panel on Climate Change (IPCC) issued updates that stated global emissions needed to be reduced within 10 to 15 years in order to prevent global temperature increases higher than 2 degrees Celsius. The British government is taking these reports very seriously.

With the passing of its Climate Change Act 2008, Britain demonstrated its commitment to decarbonize. It was the first national legislation to aggressively tackle emissions, requiring that carbon policies and budgets be announced and setting green house gas emission reductions at an ambitious 80 percent by 2050.

The British government continues its dedication to low emissions in 2009, recently announcing the Low Carbon Transition Plan in July. The plan details how the UK will implement low-carbon goals within homes, business, transport and agriculture. It includes the Renewable Energy Strategy, the Low Carbon Transport Plan, and the Low Carbon Industrial Strategy.

Focusing on Carbon Capture and Storage (CCS)

Already committed to yearly funding of 1 million pounds to the Australian Global Carbon Capture and Storage Institute (GCCSI), the British government is now extending that commitment locally. Within the Low Carbon Industrial Strategy

is the plan to build four new coal-fired power plants with carbon capture and storage (CCS) capacity. The goal is to cut carbon dioxide emissions 34 percent by 2020, with 40 percent of electricity coming from low carbon sources like clean coal, renewables and nuclear. (UK Department of Energy and Climate Change) Britain's energy secretary, Ed Miliband, believes "there is no alternative to CCS if we are serious about fighting climate change," and claims only coal stations with CCS technology will be built in England and Wales in the future. "Renewables, nuclear and clean fossil fuels are the trinity of low carbon and the future of energy in Britain."

Building new clean coal power facilities seems a necessary step to providing a reliable and clean source of power for Britain. 30 percent of UK's total generating capacity may close by the end of 2015. (8GW of coal-fired power plants, in total 20-25 GW.) Old generators at six existing coal plants are scheduled to close, deemed too old for adequate upgrades.

Under the 2007 Large Combustion Plant Directive (LCPD), "existing" combustion plants, those licensed before July 1987, were given three options: (1) meet concentration-based emission limit values (ELV's); (2) operate within the Emissions Trading Scheme; (3) "opt out" by reducing operation to 20,000 hours from January 1, 2008, and closing no later than December 31, 2015. The goal is to limit the emission of sulfur dioxide, nitrogen oxide and particle matter from "new" and "existing" combustion plants.

How does America measure up?

Because the U.S. leads the world in coal reserves, it is uniquely positioned to lead the world in CCT. Yet other nations continue to surpass us in clean coal legislation, technology implementation and cooperation between industry and government.

FutureGen, the U.S. Department of Energy's plan to equip multiple new clean coal plants with advanced CCS technology, failed due to production cost miscalculations and interdepartmental miscommunication. But perhaps the United States is finally ready for serious clean coal legislation. In July, the American Clean Energy Act 2009 passed in the House of Representatives. If it passes the Senate, the bill will eliminate barriers to commercial-scale deployment of CCS technology, set emissions requirements for coal-fueled power plants, ensure environmental integrity in carbon sequestration sites and establish the Carbon Storage Research Corporation as part of the Electric Power Research Institute (among other actions). The corporation would "assess fees totaling approximately $1 billion annually to be used…to fund the large-scale demonstration of CCS technologies in order to accelerate the commercial availability of the technologies." (U.S. House of Representatives, 2454)

What does UK clean coal mean for the US?

According to the Energy Information Administration, Europe purchased 46 percent of U.S. coal exports in the third quarter of last year. Of the 9 million short tons exported between July and September 2008, the UK received 1,256,681 short tons. If the United Kingdom gains more energy efficiency from its own clean coal production and the U.S. does not meet the UK's standards for clean coal technology, will it still need, or want, to import coal from the U.S.?

Coal remains the fuel of choice for global electricity generation. "Improving coal's environmental performance is key to coal's future role in the energy mix. In particular…carbon dioxide capture and storage," according to the executive director of the IEA. The United States should be pursuing low carbon options more vigorously in order to lower its carbon footprint and make itself appealing to a global coal market that is quickly embracing clean coal technologies. If American companies can extend CCT resources to other nations such as China, Australia, Mexico, Ukraine, India and Poland, shouldn't they lead by example and implement more of them domestically?

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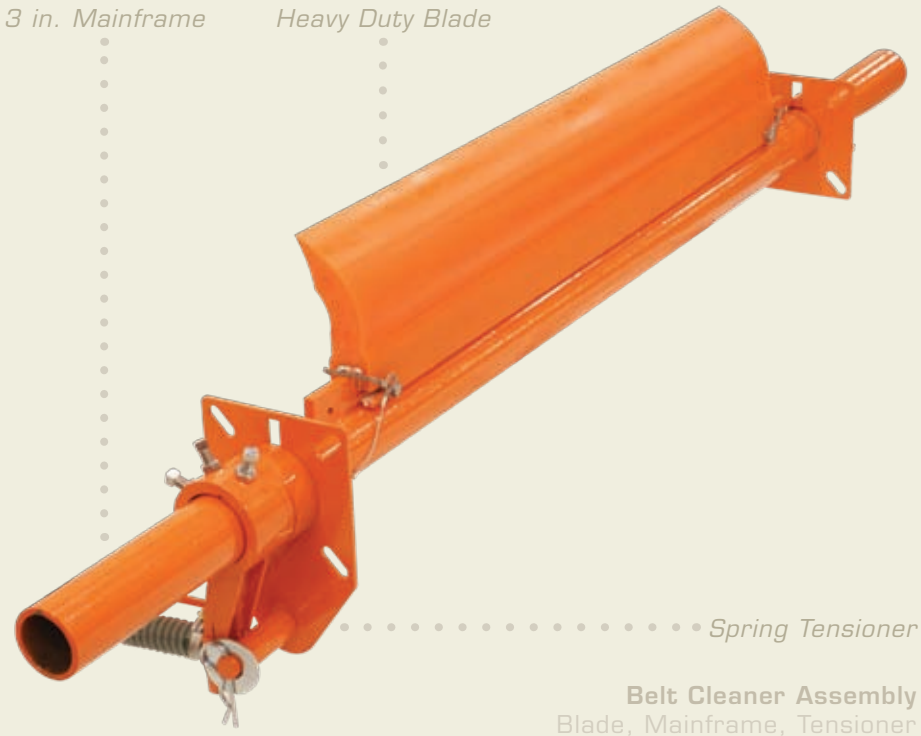

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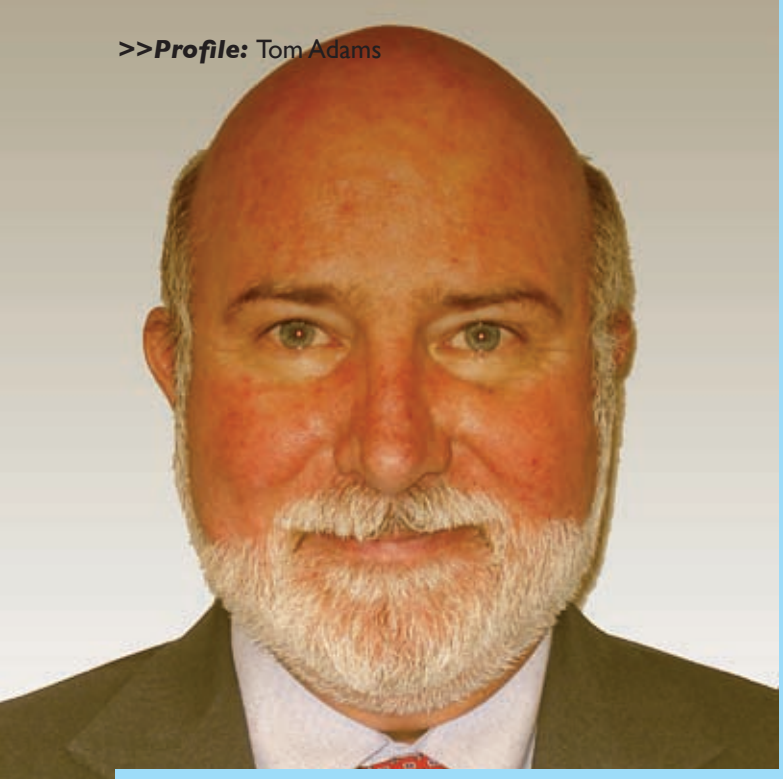


A New Executive Director for the American Coal Ash Association (ACAA): Tom Adams

By: C. Nooriel Nolan

Whether he was prepared for the controversy or not, the ACAA's new Executive Director, Thomas Adams, stepped into a very important role—convincing the "powers that be" to continue recycling coal combustion materials despite the controversy.

Thomas Adams knew the American Coal Ash Association (ACAA) was preparing for more aggressive promotion of the beneficial uses of coal combustion products (CCPs), but he could not have anticipated the controversy that would coincide with his new position. Recent coal ash accidents and the media attention on such incidents has placed coal ash (and other coal byproducts) in the hot seat. The public wants solid proof that such byproducts are safe to recycle, which prompted the EPA to announce new efforts to create regulations of CCPs as hazardous waste. Lately, Adams's primary role is responding to such regulations.

Adams believes that the future of coal combustion products lies with fly ash. Though Adams just recently joined the ACAA, his life-long passion for concrete and his experience in promoting concrete applications will be invaluable to his new role as CCP advocate. According to Adams, "the use of fly ash in cement and concrete manufacture is one of the most important beneficial uses of CCPs."

Mr. Adams's fascination with concrete began in 1970 during his stint working in a materials testing firm while in college. This fascination inspired him to pursue a career in the ready-mixed concrete industry. Then in 2008, when the ACAA's former executive director Dave Goss announced his intention to retire, Thomas Adams decided the position fit his expertise and applied. He was appointed as the new executive director in February 2009 and strengthened the designation with his 30-year background in cement (including Chief Operating Officer for Michigan Concrete Association and Executive director of American Shotcrete Association (ASA) an ACI subsidiary).

His concrete experience will serve him well in his efforts to promote the "beneficial use" of CCPs. Understanding cement components, specifically fly ash--its usefulness in strengthening cement--will be important knowledge to possess during his efforts to convince the EPA that CCPs are useful byproducts, not hazardous waste. "My experience in utilizing fly ash to improve concrete performance is a valuable asset in expanding the effort to increase utilization rates. I am well aware of the barriers to boosting use."

Mr. Adams knows that labeling coal combustion products as hazardous will have serious consequences for the industry. "We have focused our efforts on informing the EPA as to the market impacts of any kind of a hazardous rule for CCP disposal," he says, claiming that just the threat of such a label is already changing the industry. Public fear may result in companies disposing of all CCPs rather than finding beneficial uses for coal byproducts.

How does his family influence his professional decisions?

Adams credits his two children, Stephen and Lauren, with making him aware of the impact of his professional actions. "I try to model a strong work ethic, integrity in and out of the workplace, and consideration of the impacts of my actions on their generation."

What does he enjoy doing when not advocating on behalf of CCPs?

"In my spare time I enjoy playing golf with my son, following football on all levels, observing the political landscape, and reading – especially John Grisham."

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	1,171,809
East of Mississippi River 5/	528,781	492,915	469,247	484,796	493,801	490,798	478,162	493,342
West of Mississippi River	598,908	601,368	602,506	627,303	637,697	671,952	668,474	678,467
Appalachian 5/	432,919	397,214	376,071	390,875	397,363	391,911	378,956	391,626
Interior	146,890	146,622	145,992	146,038	149,165	151,389	146,668	146,586
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	1,408
U.S. Recoverable Reserves (Mil. Sht. Tons)	272,664	269,457	268,396	267,312	267,554	263,781	262,689	261,573
Recoverable Reserves at Producing Mines (Million Short Tons) 1/	17,801	18,216	17,955	18,122	18,944	18,880	18,584	17,875
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	$36,630,749
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	174,685
Conventional	4,520	6,024	8,178	1,987	2,571	3,525	2,184	3,161
Longwall	195,304	187,766	183,523	187,948	188,053	180,463	176,106	179,233
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	357,079
% 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	1,458
Underground Mines (includes refuse)	719	682	602	586	606	612	579	606
Surface Mines	759	745	714	793	809	812	795	852
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	86,859
Underground Mines (includes refuse)	45,085	43,000	40,123	42,016	44,614	47,475	46,828	49,715
Surface Mines	32,003	32,466	30,900	31,896	33,572	35,398	34,450	37,144
Average Coal Mining Employment (MSHA)6/	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	5.96
Underground Mines	4.02	3.98	4.04	3.96	3.62	3.37	3.34	3.15
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: October 2009

National Mining Association - 101 Constitution Ave. NW Suite 500 East - Washington, DC 20001 - Phone (202) 463-2600 - Fax (202) 463-2666

Upcoming issue

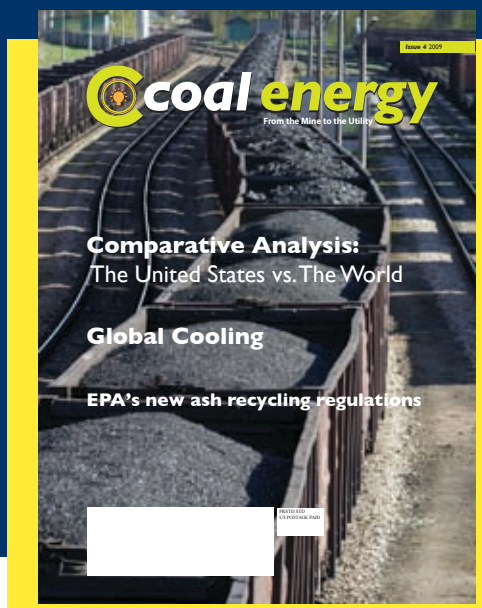
Look for these stories coming up in Issue 4, 2009:

Comparative Analysis: The United States vs. The World

Global Cooling

EPA's new ash recycling regulations

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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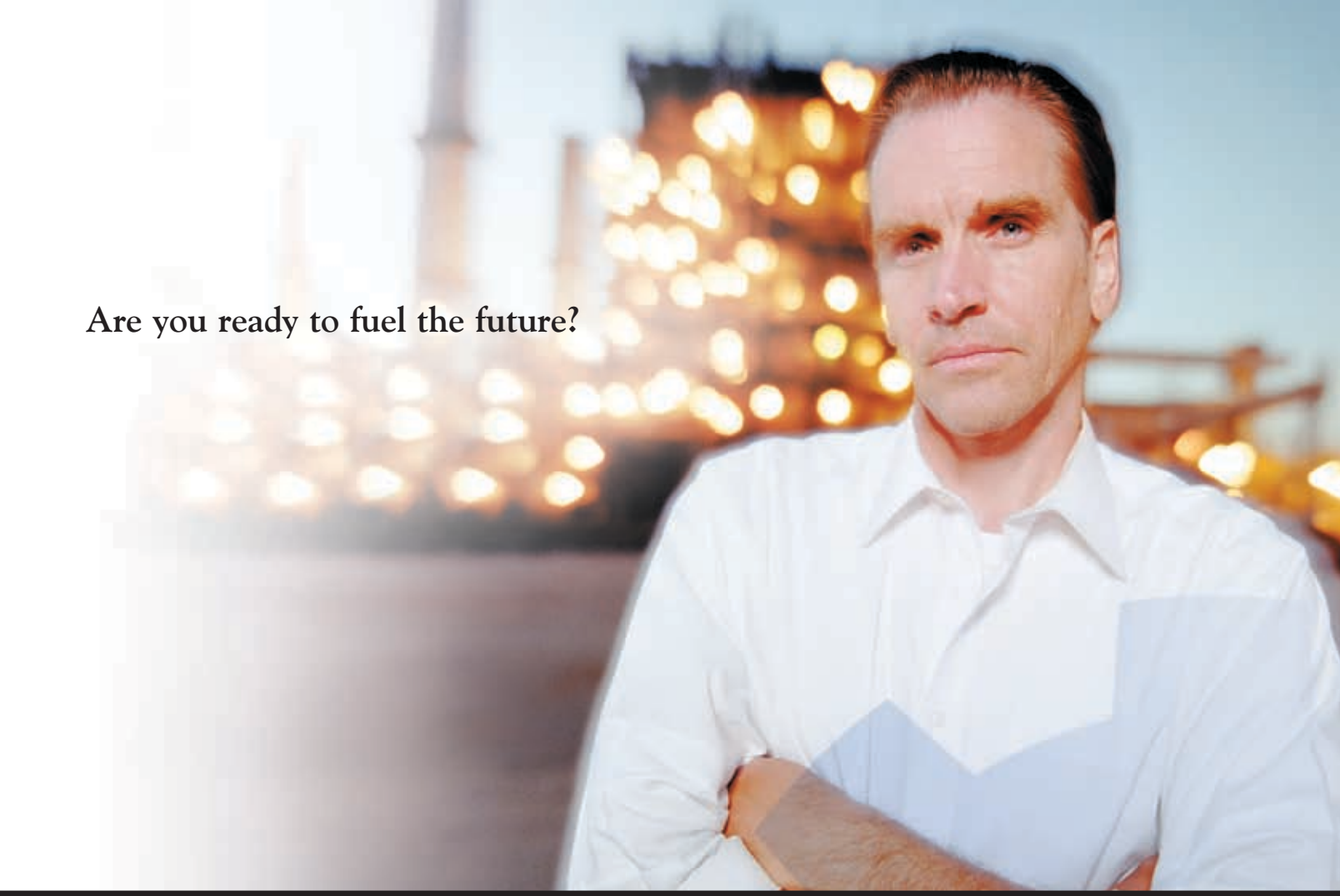

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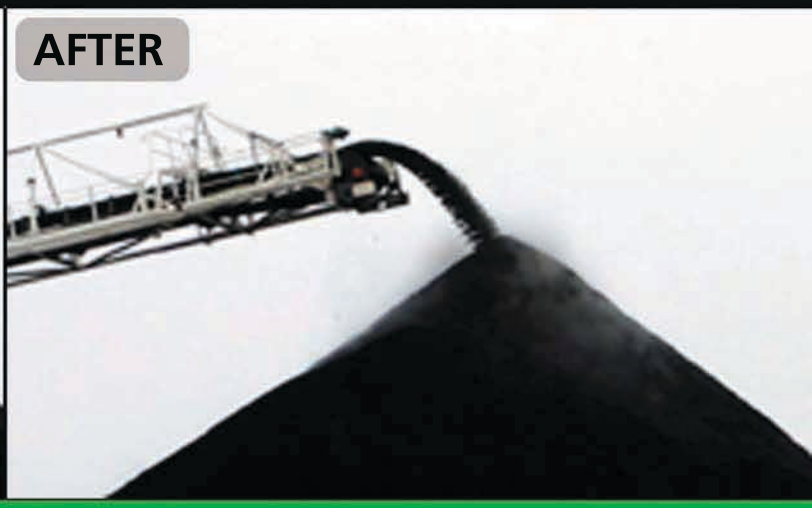

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