

Issue 1 2008

# coal energy

Research Newsflash

## Undersea Volcanic Rocks May Store CO<sub>2</sub>

Technology

## Coal Dust Solutions

# Election'08

**Race to the Presidency:** A closer look at the environmental and energy policies of John McCain and Barack Obama

PRSTD STD  
US POSTAGE PAID

# KEEP YOUR COAL OPERATION *ON TRACK* --- *(AND OVER THE BRIDGE)*

## **Do You Know The Condition Of Your Bridge?**

Keeping your facility running smoothly requires properly maintained infrastructure. Osmose Railroad Services, Inc. has helped businesses like yours inspect, repair, and maintain railway bridges critical to your facilities operation for over 50 years.

**Extend the service life of  
your bridges with Osmose.**



# Osmose<sup>®</sup>

Osmose Railroad Services, Inc. • P.O. Box 8276 • Madison, WI 53708  
(800) 356-5952 • (608) 221-2292 • FAX (608) 221-0618 [RRDiv@Osmose.com](mailto:RRDiv@Osmose.com)

©2007 Osmose is a registered trademark of Osmose, Inc.

# table of contents

Issue 1 2008

**03 Letter From the Editor**

**04 Election '08**

Race to the Presidency: A Closer Look at the Environmental and Energy Policies of John McCain and Barack Obama

**10 Feature**

Liquid Coal: Is it Really the Future?

**14 Technology**

Coal Dust Solutions

**21 Press Releases**

Miner Enterprises Releases New Installation and Inspection Pocket Guide

**22 Playing it Safe**

MSHA's "One Call Does It All" Campaign Promotes Mining Safety

**24 Feature**

Breaking Down Brakes

**28 Research Newflash**

Undersea Volcanic Rocks May Offer Vast Repository for Greenhouse Gas

**31 By The Numbers**

**32 Steel and Rail – Interface Journal**

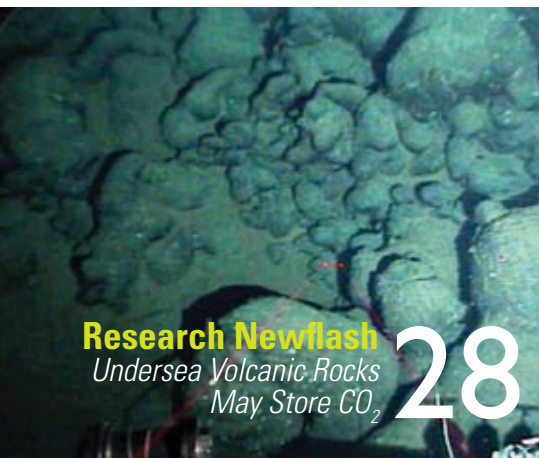
Implementing Wheel/Rail Measurement and Analysis Technology

**36 Upcoming Issue**



**Election '08**  
Race to the Presidency

4



**Research Newflash**  
Undersea Volcanic Rocks  
May Store CO<sub>2</sub>

28



**14 Technology**  
Coal Dust Solutions

## Published & Produced By:

**Martonick Publications, Inc.**  
Headquarters  
DELRAY BEACH  
323 NE 6<sup>th</sup> Avenue  
Delray Beach, FL 33483

Toll Free Phone: (866) 387-0967  
Toll Free Fax: (866) 458-6558

info@martonickpublications.com

www.martonickpublications.com

**President:**  
Maria Martonick

**Vice President:**  
Steve Martonick

**Managing Editor:**  
Vilmarie Estrella

**Graphic Designer:**  
Javier Espinosa

The opinions expressed by the authors of the articles contained in Coal Energy are those of the respective authors, and do not necessarily represent the opinion of the publisher.

# We will deliver thousands of new railcars this year.

With an average age under five years, Mitsui Rail Capital (MRC) has the youngest railcar fleet in North America.

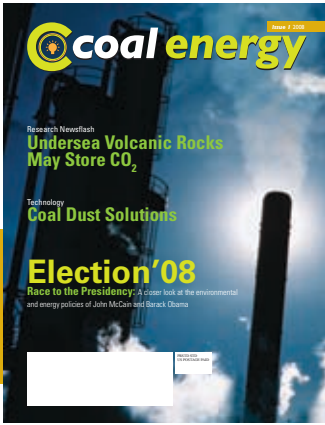
As a rapidly growing railcar leasing company, MRC offers superior equipment, creative financing and a staff committed to meeting the varied needs of rail shippers.

At MRC, we may not be the biggest but we're working hard to become the best. Just ask our customers.



Mitsui Rail Capital, LLC

Inquiries: David Kerr  
Director of Marketing  
Mitsui Rail Capital, LLC  
71 S Wacker Drive, Suite 1800  
Chicago, IL 60606  
Phone: 312-803-8880  
Email: [info@mrc-rail.com](mailto:info@mrc-rail.com)



# letter from the editor

Dear Readers,

Thank you for picking up a copy of the very first issue of Coal Energy magazine! We are excited to start this new venture with you.

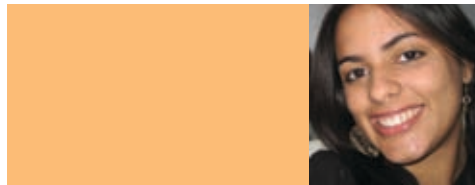
Coal is an important part of the way our country and the world operate. America produces 35 percent of the world's coal supply, making us a leader in the global energy market. It is important for the industry to have a forum to discuss advancements in science and technology, as well as energy problems we're faced with in the 21st century and possible solutions. That is what we hope to provide you with: a reliable source to coal and energy news and undertakings.

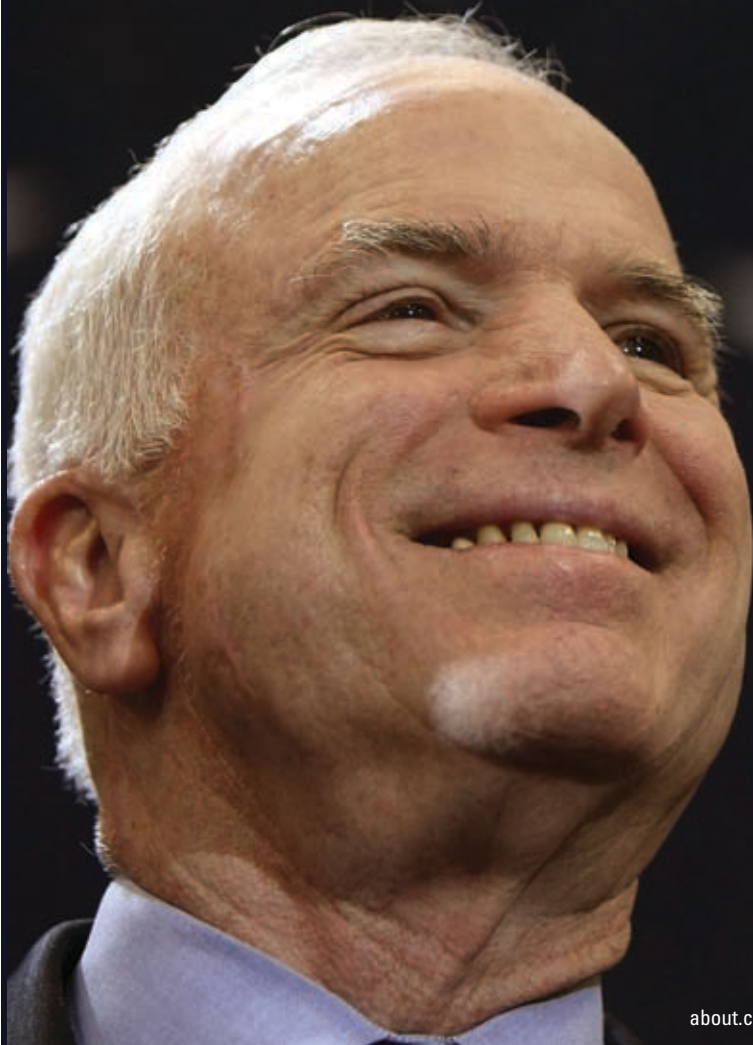
In this issue, we discuss the headline-grabbing topic of the hour—the 2008 presidential race. We explore what John McCain and Barack Obama have to say in regards to coal and energy. Also in this issue, you will find an informative article on coal dust solutions, as well as a look at what liquid fuel can do for the coal industry.

We hope you enjoy this read and welcome any feedback. Send your questions and comments to [vilmarie@martonickpublications.com](mailto:vilmarie@martonickpublications.com). Please look forward to upcoming issues!

Regards,

**Vilmarie Estrella**





about.com

## John McCain

While on the campaign trail, McCain announced his commitment to breaking dependency on foreign energy in the form of the Lexington Project. Speaking out about the project, he said: "In a world of hostile and unstable suppliers of oil, this nation will achieve strategic independence by 2025."

# RACE TO THE PRESIDENCY

A closer look at the environmental and energy policies of John McCain and Barack Obama

By Vilmarie Estrella

*As the November elections edge closer, the big issues start coming to the forefront. With the looming economic and climate crises, plans assuring energy and environmental change are grabbing headlines left and right. Voters are keeping a close eye on what America's new president plans on doing to alleviate these problems. Here's a closer look at what the two main presidential candidates are promising the American people.*



# Barack Obama

about.com

Barack Obama not only wants to see the U.S. kick its habit of depending on foreign oil but he wants the U.S. to gain independence from the finite source of oil — period.

Under his plan, the U.S. would be on track to reduce oil consumption by at least 35 percent, or 10 million barrels per day, by 2030. He looks to alternate fuel as an alternative to oil. During his run as senator, Obama helped increase access to and use of renewable fuels by

helping pass legislation to give gas stations a tax credit for installing E85 ethanol refueling pumps.

If elected, Obama would also double fuel economy standards within 18 years. He would monetarily aid domestic auto plants and parts manufacturers to help them build new fuel-efficient cars instead of importing from overseas. By changing the automotive industry instead of searching for more places to drill for oil, he plans on getting America to quit depending on oil.



## McCain On...

### The Lexington Project

Devised by McCain's camp, the Lexington Project calls for several changes in the way America seeks energy. One of the project's points is expanding domestic oil exploration, and that includes getting the federal government to lift restrictions on drilling in the Outer Continental Shelf. McCain says that this would help keep more dollars in the country, reduce trade deficits and help relieve America's current economic crisis.

McCain also plans on reforming the way Americans get from here to there. His ideas to reform the transportation sector include incentives for the automotive industry to create more hybrid and electric cars and looking into alcohol-based fuels, like ethanol, as an alternative to gasoline.

### Coal and Nuclear Power

One of the biggest impacts McCain could have on the coal industry is his pledge to contribute \$2 billion annually to the advancement of clean coal technologies. Though experts predict

that marketing clean coal in a practical and effective way could take up to 15 years, McCain wants clean coal readily available sooner.

He plans on doing so by investing federal resources to advance the science, research and development of clean coal technology. Once commercialized, McCain would like to see the U.S. export these technologies overseas to create more jobs domestically and to give America more prevalence in the international green economy.

Under his administration, McCain would also like to advance the country's use of nuclear power by having 45 new nuclear plants constructed by 2030. Ultimately, he would like to see 100 new nuclear plants constructed. Stating that the U.S. hasn't constructed a nuclear power plant in over 30 years and that other big players like China, India and Russia have plans of constructing new plants, McCain wants the U.S. to be up to par on the international energy field.

### Cap-and-Trade

McCain is no stranger to strategizing ways to reduce carbon emissions like he did when he helped conceive the McCain-Lieberman Climate Stewardship and Innovation Act of 2005.

Under his administration, McCain proposes a cap-and-trade system to set limits on greenhouse gas emissions and allow entities to buy and sell rights to emit. His campaign platform points out that key to his cap-and-trade system would be allowing the market to decide and encourage the lowest-cost compliance options. The system would exempt small businesses but would encompass electric power, transportation fuels, commercial business and industrial business.

McCain has also set targets and timetables to reduce greenhouse gas emissions. By 2012, he wants to see emissions return to 2005 levels. By 2020, he wants emission levels to return to 1990 levels, then reduced by 22 percent by 2030 and ultimately reduced to 60 percent below 1990 levels by 2050.



[oaklandpostonline.com](http://oaklandpostonline.com)

A photograph of Barack Obama, the 44th President of the United States, smiling broadly while speaking at a podium. He is wearing a dark suit, a white shirt, and a blue and yellow striped tie. A microphone is visible in the foreground. The background is blurred, showing what appears to be a large audience or a stage setting.

## Obama On...

### ■ Cap-and-Trade

Obama backs the implementation of a market-based cap-and-trade system to reduce carbon emissions. By 2050, he wants to see emissions at 80 percent below 1990 levels.

His system would require all pollution credits to be auctioned to ensure that all polluters pay for every ton of emissions they release. With some of that revenue generated by the auctions, he would fund the development of clean energy and improvements on already existing efficiency programs, as well as covering transition costs.

His plan to put a cap on carbon would also make it unprofitable to site traditional coal facilities and dissuade continued use of inefficient existing ones.

### ■ Coal

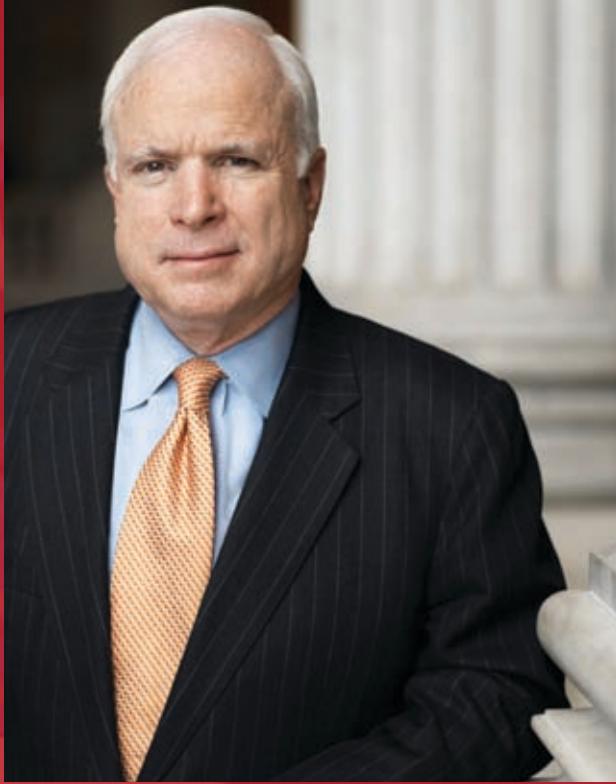
Over the next 10 years, Obama wants to invest \$150 billion in clean energy, and that includes funding low-emission coal plants, advancing biofuels, commercializing plug-in hybrids, developing commercial-scale renewable energy and beginning the transition to a new digital electricity grid. He also plans on doubling investments in clean energy science and research projects.

As part of his plan to develop and deploy clean coal technology, Obama promises to significantly increase resources needed to commercializing and setting out low-carbon coal technologies. He would consider a ban on building any new traditional coal facilities, only moving forward with plans to build clean coal plants to further coerce and

commercialize the change. He would, however, work to ensure that those traditional coal facilities that do exist are retrofitted with carbon capture and sequestration technology as soon as it is commercially available.

### ■ Nuclear Energy

Safety is Obama's main concern when considering resorting to nuclear energy. He hasn't announced any plans to move forward with new nuclear plants in the near future without first addressing a couple of issues. Public right-to-know, security of nuclear fuel and waste, waste storage and proliferation are his top concerns, in addition to preventing international nuclear material from getting into terrorist hands.



## John McCain

“The development of clean coal technology will create jobs in some of America’s most economically disadvantaged areas. Our coal reserves are larger than Saudi Arabia’s supply of oil. Clean coal demonstration projects alone will employ over 30,000 Americans. In the state of Colorado over 80 percent of the electricity comes from coal, and in Ohio it’s over 90 percent.”

*-July 7, 2008 in Denver, Colo.*

“Perhaps no achievement would do more to secure our energy future than the mastery of clean-coal technology. From Wyoming to West Virginia, America’s coal resources are greater than the oil riches of any kingdom of the Middle East. Burning coal cleanly is a challenge of practical problem-solving and human ingenuity—and we have no shortage of those in America either.”

*-June 25, 2008 in Las Vegas, Nev.*

“In this way, we will transition into a low carbon energy future while staying on a course of economic growth. The purpose of this plan is to give American businesses new incentives and rewards to seek, instead of just giving new taxes to pay and new orders to follow. My strategy gives people time to adapt, instead of causing a jolt to your electricity bill and widespread shutdowns of tradition coal-fired plants.”

*-June 24, 2008 in Santa Barbara, Calif.*



## Barack Obama

“And when I’m president, we will invest in research and development of every form of alternative energy—solar, wind, and biofuels, as well as technologies that can make coal clean and nuclear power safe. We will provide incentives to businesses and consumers to save energy and make buildings more efficient. That’s how we’re going to create jobs that pay well and can’t be outsourced.”

*-June 16, 2008 speech in Flint, Mich.*

“It’s time to make energy security a leading priority. My energy plan will invest \$150 billion over the next 10 years to establish a green energy sector that will create up to five million jobs over the next two decades.”

*-June 16, 2008 speech in Flint, Mich.*

“...we must find a way to stop coal from polluting our atmosphere without pretending that our nation’s most abundant energy source will just go away. It won’t...Already, some coal pollution from China’s dirty plants is making its way to California. That’s why we must invest in clean coal technologies that we can use at home and share with the world. Until those technologies are available, I will rely on the carbon cap and whatever tools are necessary to stop new dirty coal plants from being built in America—including a ban on new traditional coal facilities.”

*-Oct 8, 2007 speech in Portsmouth, N.H.*

**Calvert  
City Terminal**

**Precision  
Coal Blending**



**CUSTOM COAL  
BLENDING**

Accuracy: 99.9%

Volume:

1,000,000 Tons/Month

Source Coals:

Wyoming

Colorado

Illinois

Utah

Kentucky

Montana



**BLENDING IS  
THE ANSWER**

to high coal prices and  
increased regulation.

Calvert City Terminal

is located at the

center of the Inland

river system.

We would like an

opportunity to

earn your business

800-547-9918



# Making Too Many Calls?

Freight Car Parts...  
Locomotive Parts...  
AEI Equipment...



One call does it all! 800-878-9440

want to see your ad in

**coal energy ?**

Toll Free Phone: (866) 387-0967

[www.martonickpublications.com](http://www.martonickpublications.com)

# Liquid Coal:

*Is it really the future?*

By Margaret Truitt



**As oil prices keep reaching historic highs, the controversial process of turning coal into fuel is becoming increasingly popular, especially to coal-rich countries.**

Later this year, China is expected to begin turning its vast coal reserves into barrels of oil. The plant is expected to convert 3.5 million tons of coal per year into 1 million tons of oil products. Based on current consumption, that's enough to provide 4 percent of China's fuel needs.

South Africa, home to the only commercial coal-to-liquids, or CTL, plant in the world, adopted the technology dur-

ing the apartheid era because of pricey international embargoes. Today, South African CTL plants account for 28 percent of the country's annual fuel needs.

With similar ambitions of becoming more fuel self sufficient, the United States, India, the Philippines, Indonesia and Australia are also moving forward with CTL projects.

CTL technology, which was first created in Germany in the 1920s, is gaining international interest because it's not only a cheaper alternative to oil, but it's also more abundant. Increased debate about how long the world's depleting oil reserves will continue to meet demand adds to the appeal.

Richard Bajura, director of the National Center for Coal and Energy at West Virginia University predicts coal can be produced for about \$70 a barrel. On the first week of July, a barrel of oil spiked to more than \$143.

"If you look at the price advantage, it's worth our while to keep investing in cleaner coal technologies. If other countries can be successful in launching this technology, so can we," Bajura said.

The main challenge CTL technology faces comes from environmentalists who claim the process causes excessive greenhouse gases. The other obstacle is financial. A CTL plant comes with a price tag of about \$4 billion. However, CTL proponents remain optimistic.

"The basic principles of CTL are known and we can make the system work. The main issue is to expand to include carbon capture and biomass in the feedstock," Bajura said. "If people believe they can make money out of it, they'll invest."

According to the 2008 CTL conference in Paris, there are about 15 CTL projects in the U.S. — home to the largest coal reserves in the world. At the top of the list is a plan from the federal

>>feature: liquid coal

government to allow construction for what could be the country's first CTL plant in Montana.

## Malmstrom CTL Project

The Air Force is considering leasing 700 acres of unused land on the Malmstrom Air Force Base to any contractor qualified to build and manage a CTL plant capable of producing 20,000 to 30,000 barrels of fuel a day. The plant would be completely financed by the private sector.

"We are at the leading edge of a long process to assess energy opportunities at Malmstrom Air Force Base and this effort is key component of our overall quest to become less dependent on foreign oil," said Ed Gulick, an Air Force spokesman.

Judy Tepperman, Deal Team Lead of the Malmstrom CTL project, said the Air Force is currently evaluating proposals from private developers and looking at how each one proposes to capture and sequester carbon — the subject of greatest environmental concern.

"At the end of the process, we will select whoever makes the best-long term offer," Tepperman said.

Once selected, the developer would enter into exclusive negotiations with the Air Force to create a detailed proposal and plan. Once a lease is signed, the developer would move forward with the completion of planning, design and construction of the plant.

The Air Force expects to make a public announcement about their developer selection before 2009. The Air Force has already announced plans to fuel half its North American fleet with a synthetic-fuel blend by 2011.

Politicians are increasingly growing supportive of CTL plant opportunities because of the potential to not only strengthen national security, but also stimulate the economy by creating new jobs and bringing greater prosperity across the board.

The construction of just one CTL plant is estimated to take three to five years to develop and another three to four years to construct, creating 1,500 to 2,000 construction jobs per project. Permanent employment for each facility will be about 300 to 400 skilled, heavy industry workers.

The question of whether coal is the answer to a sagging economy and skyrocketing gas prices remains to be answered. However, each trip to the gas pump serves as a constant reminder that becoming fuel efficient and less dependent on foreign oil is a clear priority — one that will continue making CTL fuels an increasingly enticing technology to explore.

# Delivered ...

## Do 50 major utilities know something you don't know?

Like you, they had their pick of consultants. But siting and other development challenges required a firm that could deliver the whole generation package.

HDR Owner's Engineers have helped public and private utilities throughout the US and Canada create total generation solutions through the multidisciplinary expertise of our fast growing, full-service firm.

From water and environmental to transportation and power delivery solutions, we deliver a bigger picture.

Contact us, and see what owners of coal, gas, nuclear and renewable energy have been able to achieve.

[energy@hdrinc.com](mailto:energy@hdrinc.com)

[www.hdrinc.com](http://www.hdrinc.com)



HDR

ONE COMPANY  
Many Solutions®

# Here for the LONG HAUL



**Miner draft gears provide million-mile protection.**

## **Long-Haul Durability**

Whether it's a short run from the mine to the plant, or they're coming cross-county from the Powder River Basin, coal hoppers are put through punishing service day in and day out. Utilizing the industry-proven friction clutch design, combined with durable and resilient spring packages as well as sturdy cast alloy steel housings, Miner draft gears are built to provide years of trouble-free protection – keeping your cars in service.

## **Long-Haul Dependability**

Miner draft gears have consistently demonstrated that their superior capacity actually increases over time, even in the most demanding unit-train service applications. In fact, Miner draft gears are known to perform as good as or better after prolonged use. Tests have shown Miner draft gears to provide double-digit increases in capacity after 1,000,000 miles of service.

## **Long-Haul Security**

As a pioneer and industry leader in draft gear design, Miner has over 100 years experience and over 1,000,000 units currently in service. When you put Miner draft gears on your coal cars, you can rest assured they will be there for the long haul.

*To find out how Miner's draft gears can protect your coal hoppers for the long haul, contact Miner today.*

16-Time TTX SECO Award Winner  
**Commitment to Excellence**  
Service • Engineering • Quality

© 2007 Miner Enterprises, Inc.



W. H. MINER DIVISION  
[www.minerent.com](http://www.minerent.com)



**We're working around the clock for you.**

Arch Coal is committed to your #1 goal of providing dependable, affordable electricity to your customers. That's why we work around the clock to provide quality assurance, trusted reliability and personal service. With a national network of mines in every major low-sulfur coal basin, we can meet the demands of energy users from coast to coast.

Give us a call today 1.800.282.2724.







# Technology: Coal Dust Solutions

New Technology and Programs  
Revealed to Help Relieve the  
Coal Dust Problem

*By James A. Marcum and Trey Cranfill of  
AKJ Industries, Inc.*

***Dust from coal mining and transportation has become an industry cocktail party topic of discussion — of course, not quite up there with the cost of gasoline, but ever more popular. The coal dust problem is discussed in numerous news reports ranging from worker health and safety to air quality in and around train tracks. Articles even go as far as listing coal dust as a contributing factor in coal mine disasters around the world.***

People that live along railroad tracks and roads used to transport coal bring up the subject in town meetings and in local newspapers. Dust falling onto railroad tracks is sometimes blamed in car derailments due to ballast draining problems.

Representatives in Washington have several bills on the table aimed to solve the dust problem from mine safety to explosive concentrations of all kinds of dust.

## **History**

Fugitive dust is caused by small particles created from material impact and wind erosion. Particles less than 200 microns become airborne from air displacement in the transfer systems or wind. Dust particles less than 10 microns are respirable and create a health hazard.

**>>technology:** coal dust solutions

Dust challenges vary depending on the material being transferred. As an example, western coal is more friable and has less surface moisture than eastern coal, making it dustier.

Many materials, especially coal, defy being dampened by water alone because they both have the same electrical charge and repel each other. Drenching the material can counter the repelling effect but can have a negative impact on the handling system and create costly BTU penalties in burning the treated material.

### Methods of Water / Chemical Mitigation of Dust

The recent emphasis on coal dust issues and energy efficiency create a need for dust control programs. Options for dust control include wet spray and foam programs. Wet spray programs involve mixing surfactants with water. The resulting solution contacts the material being treated in a way that controls the dust and the amount of moisture added is minimized.

Foam programs involve mixing surfactants, water and air such that the resulting foam contacts the material being treated to control dust and minimize the amount of moisture addition.



Untreated and treated coal after “mixing” in a high speed blending. No dust is generated in this test when treated with AKJ DC-2008.

In the past, the use of foam allowed plants to control dust with lower solution application rates, and therefore lowered moisture levels and costs. But these benefits no longer exist. New surfactant technology allows wet spray programs to perform at equivalent application rates with no loss in performance. Since the dilution ratios are normally much higher with the wet spray program, costs are lower than with the dated technology foam programs.

In plants that still use foam systems, the benefits of wet spray can be demonstrated easily by turning off the compressed air, changing the nozzles to wet spray nozzles, leaving the water flow the same, reducing the amount of chemical applied and observing system results. In some cases, the nozzles may have been in the wrong locations and will need to be changed in order to realize the total improvement in results.

A third hybrid, and environmentally clean, method was recently introduced by AKJ Industries, Inc.: EnviroGreen Dust Control. This hybrid is “foam without the fuss” in that the applied solution of water and chemical product sits on the surface of the coal. It stays where it is sprayed without the need for air injection. This unique, patent-pending product works by allowing a solution of product to effectively impact dust particles to provide point of application dust suppression. The dust particles are captured by the solution that is then mixed and settles on bigger pieces of the material being treated. The chemical/water solution resists being wicked into the internal surfaces of the larger particles resulting in the applied moisture lasting longer before it dries completely. This provides more effective dust control than products that do not have this feature.



Fine, powdered coal “wetted” with water alone floats on the surface and disperse to completely cloud the glass. Same type dust is “wetted” with water/DC-2008 and fine particles bind together to form larger, heavier particles that sink and never cloud the glass. blending. No dust is generated in this test when treated with AKJ DC-2008.

>>**technology:** coal dust solutions

AKJ's new technology also provides for downstream dust mitigation due to its hydroscopic nature where it is actually reactivated as it absorbs new moisture from the surrounding humid air for days after it is first applied.

### Program Selection and Monitoring Considerations

Materials vary in their reaction to different surfactants. What works well on western coal may not work well on eastern coal. For that reason, it is a good idea to test the dust-causing material using all available processes and chemicals. A new methodology of routinely accomplishing this sort of testing was developed by the Mid-Atlantic Technology, Research & Innovation Center (MATRIC) for AKJ Industries, Inc. Several approaches were investigated in the process of developing a method that would allow a quantification of the amount of dust generated from a sample of a solid mixture. Key considerations were:

1. Reproducible method
2. Capable of being performed in a laboratory
3. Does not require large amounts of sample
4. Can be used with a variety of solid materials
5. Rapid acquisition of data

The developed test protocol centers around a test apparatus that consists of placing a modified funnel with filter paper over a sample to be tested, drawing air through the funnel with a vacuum and determining the weight gain of the filter paper after a standard period of time. The sample is also vibrated during the test.

Dust control is both an art and a science. The science part involves selecting the right product for the application after conducting a screening as discussed above. The art part involves selecting the proper application points and designing reliable equipment that matches the system requirements. System surveys must be conducted prior to making final recommendations.

Equipment options are numerous. It can be as simple as the use of a by-pass cartridge feeder for soap type surfactant products, or as complex as a load following system, treating multiple crushers with "windmilling" capabilities that run a crusher empty.

Results can be easily evaluated by user observations, before-and-after pictures or an instrument such as DustTrak Particulate Monitoring. The DustTrak Monitor gives an instantaneous reading of respirable dust levels. Collecting of before-and-after data is used to calculate the effectiveness of the program.



**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

"The Next Generation of Coal Services"



# THE NEXGEN DIFFERENCE



**Operations**



encompassing coal procurement, coal transportation, and coal yard operations which can include owning and operating your coal facilities.



**Transportation**





An untreated road creates clouds of coal dust.

The use of a dust suppression program can only do so much. It is important that plants maintain the mechanical aspects of their equipment. Belt scrapers, side wipers and door seals are an important part of controlling coal spillage, and therefore, dust.

## Underground Dust Control

Unless treating a crusher, stage loader or belt head, underground dust control differs from dust control in handling systems in the amount of water that is applied to the material and how it is done. Water sprays apply water to scrub the air and treat the coal. Water addition rates are much higher (gallons per ton) than those of above ground applications so chemical dilution ratios are normally also higher.

Treatment programs can be as simple as using a solid soap type treatment in a cartridge feeder to using a foam program with a “conditioning-following” feed system on a longwall stage loader.

AKJ’s Coal Soap #10 is a solid surfactant product designed for use on continuous miner units. The material is applied using a cartridge feeder where the

product is slowly dissolved by flowing a by-pass stream of water through the cartridge feeder. The amount of the flow is controlled by a valve at the top of the feeder. A typical miner section will use a water flow of 40 gpm. At this flow rate, the continuous miner will use one to two cartridges per shift.

The “condition-following” feed system is unique. The theory behind it is that the same amount of dust is not generated all the time in the longwall mining process — the harder the equipment works, the more dust is generated. The “condition-following” feed system takes a reading from the power center and adjusts the chemical feed rate based on the number of amps being drawn. This controlled method improves results and reduces costs.



Haul road is spray treated to prevent coal dust.

## Car Top Binders/ Coal Pile Sealants

Some mines are required to treat coal for dust control in transit. A common way of doing this is to use sealant material, such as resin, latex or the new hybrid-type product mentioned above. The same technology works for sealing coal piles to control wind blown dust. Application rates are product-, material- and conditions-specific.

NCTA, coal companies and electric utilities are involved in an ambitious testing program to understand the dynamics of coal dust while being transported by rail. Results from this test work are expected by the end of 2008.

## Road Dust Control

Mine haul roads generate dust that creates a safety hazard, increases vehicle and road maintenance and can cause public relation problems.

**>>technology:** coal dust solutions

Surfactant products work by providing reduced surface tension of the water. This effect allows the water to penetrate into the soil, reducing loss of water to evaporation and providing more effective dust control. Improved penetration reduces the frequency of applications required to maintain adequate control.

Calcium chloride-based products work by binding the fines in the road surface and drawing moisture from the atmosphere to replenish the dust control. The road should be scarified prior to application. The road may be “touched up” at higher dilution ratios after being treated with concentrated calcium chloride solution.

Petroleum resin-based products work by binding the fines into a hard surface resistant to rain. Typically, it is applied as noted for calcium chloride applications.



Treated road does not create coal dust.

The new hybrid products are also finding uses in treating haul road dust problems. The hybrids combine the hydroscopic properties (as found in the salt products) with the particle binding properties of the petroleum products without the corrosion of the former and the high costs of the latter.

The grill stone illustrates the “foam without the fuss.” DC-2008 stays where it’s sprayed on the surface of the stone pools, while water plus surfactant spreads out and soaks into the stone.



**SAVAGE** Coal and Power Generation Integrated Supply System

<b>ENERGY PRODUCERS:</b> <b>COAL MINES, WASTE COAL, OPEN PIT</b> Systems Evaluation Blending Loading Systems	<b>TERMINAL/DISTRIBUTION HANDLING</b> Sampling Weighing	<b>COAL CONSUMERS: SITE SERVICES</b> Design Assistance Performance Optimization Asset Management Operation and Maintenance Combustion By-Products, Handling and Disposal
<b>TRANSPORTATION</b> Rail Barge/Vessel Truck Conveying	<b>LOGISTICS MANAGEMENT</b> Scheduling Inventory	

Savage Services Corp. (801) 944-6600 www.savageservices.com  
Dave Wolach, Executive Vice President Davew@savageservices.com  
Fred Busch, Senior Vice President, Power Generation Services fredb@savageservices.com  
Charlie Monroe, Senior Vice President, Coal Services charliem@savageservices.com

# American Mining Companies Win Environmental Awards

Las Vegas, Nev. – Eleven U.S. coal and mineral mining companies won annual awards from federal agencies today in honor of their outstanding land reclamation and environmental accomplishments. U.S. Department of the Interior officials presided at the awards luncheon held at the Las Vegas Convention Center during MINExpo INTERNATIONAL® 2008, the world's largest mine exhibition.

Hal Quinn, president and CEO of the National Mining Association (NMA), the national trade group sponsoring MINExpo®, joined Brent T. Wahlquist, director of the U.S. Office of Surface Mining Reclamation and Enforcement, and James L. Caswell, director of the Bureau of Land Management, in praising the 2008 winners. "Thanks to the environmental stewardship of companies like these, America's mining companies have reclaimed more than 2.5 million acres of land and restored them to productive use," said Quinn. "These awards are a tribute to the dedicated efforts of the managers and employees of these companies, who have moved American mining into the environmental age."

This year, eight coal mining operations in West Virginia, Wyoming, Texas and Indiana were recognized by the U.S. Office of Surface Mining (OSM) for their exemplary efforts to reclaim mined lands for beneficial uses and for involving local landowners and communities in reclamation and environmental efforts.

In addition, three mineral mining operations, two in Nevada and one in Idaho, were recognized by the U.S. Bureau of Land Management (BLM) for their outstanding reclamation and sustainable development accomplishments.

The 2008 Department of the Interior environmental award winners for all mining categories are as follows:

## OSM Excellence in Surface Mining Awards for Coal Companies

### Director's Award

Luminant Mining Company, LLC (formerly TXU)  
Dallas, Texas; Big Brown Mine; Martin Lake Mine; Monticello Mine; Oak Hill Mine and Thermo Mine  
Dallas, Texas

### National Awards

ICG Eastern, LLC Birch River Complex  
Webster Country, W.Va.

Rio Tinto Energy America  
Jacobs Ranch Mine  
Wright, Wyo.

Black Beauty Coal Company - Peabody Energy Corporation -  
Miller Creek Mine - Sugar Ridge Pit  
Clay County, Ind.

Road Fork Development  
Superior Surface Mines  
Logan County, W.Va.

## Good Neighbor Awards

### Bronze Award

Thunder Basin Coal Company, LLC - Arch Coal, Inc.  
Black Thunder and North Rochelle Mine  
Wright, Wyo.

### Silver Award

Rio Tinto Energy America  
Antelope Mine, Cordero Rojo Mine, Jacobs Ranch Mine  
Wright, Wyo.

### Gold Award

Coal-Mac, Inc. Complex - Arch Coal, Inc.  
Mingo and Logan Counties, W.Va.

## BLM Reclamation and Sustainable Development Awards for Mineral Companies

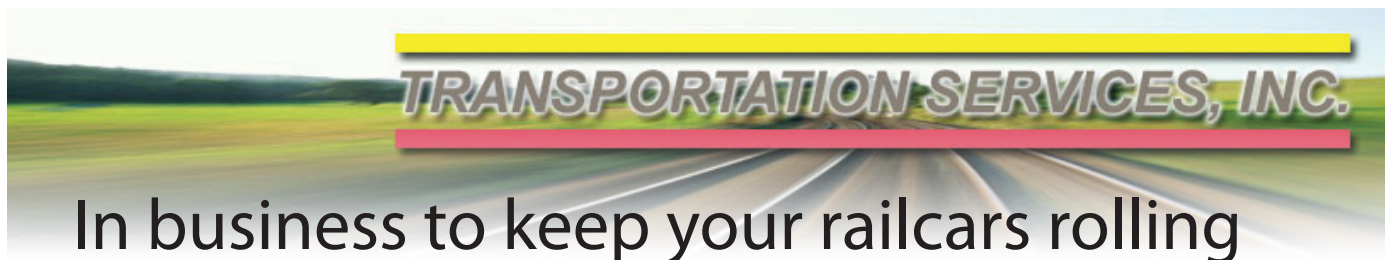
### Community Outreach and Economic Security Award

Ruby Hill Mine, Homestake Mining-Barrick Gold of North America  
Eureka, Nev.

Thompson Creek Mine, Thompson Creek Metals Company  
Clayton, Idaho

### Environmental Award

Comstock Mill Site, El Paso Corp.  
Storey Country, Nev.



**TRANSPORTATION SERVICES, INC.**

In business to keep your railcars rolling

- Railcar Maintenance
- Railcar repair
- Industrial Switching
- Daily Locomotive Inspections
- Locomotive Fueling
- Track Construction
- AAR Railcar Billing Services



1-888-390-0075



[www.tsi-rci.com](http://www.tsi-rci.com)

# Miner Enterprises Releases NEW INSTALLATION AND INSPECTION POCKET GUIDE

By Miner Enterprises

**Miner Enterprises, Inc.** is releasing an updated version of its Installation and Inspection Pocket Guide. Version 3.0 contains information related to the installation and inspection on Miner's TecsPak® constant contact side bearings, draft gears and brake beams.

The side bearings portion of the guide includes information such as selection guides, set up height, wear indicators, and new and retrofit installation information. The draft gear section features general descriptions of Miner's gear as well as a procedure for determining the gear's serviceability. The area of the guide relating to brake beams also includes a general description of the beams, as well as inspection and strut hand change procedure information.

You can download an electronic version of the guide from Miner's Web site at [www.minerent.com](http://www.minerent.com), or to get your free printed version, call (630) 232-3000.

Miner Enterprises, Inc. is the leader in the design and manufacture of a wide variety of railcar components, including high capacity draft gears, TecsPak® constant contact side bearings, brake beams and heavy-duty discharge systems.

For more information on any of Miner's reliable railcar components, contact:  
Miner Enterprises, Inc.  
1200 East State Street  
Geneva, IL 60134  
Phone: (630) 232-3000 (630) 232-3055

## RAIL LINK

### Contract Mine Loading and Utility Unloading Services

*Serving the Powder River Basin since 1996*



a Genesee & Wyoming Company



[www.gwrr.com](http://www.gwrr.com)

# MSHA's "One Call Does It All" campaign encourages miner safety

The Mine Safety and Health Administration is calling for the mining community to remember this number: 800-746-1553. The number is the agency's national hotline and should be used to report accidents and workplace hazards.

With the "One Call Does It All" campaign, as MSHA is calling it, they're hoping to spread the word — or rather, the number. Through the campaign, which began last summer, MSHA is distributing stickers, magnets and business cards that display the toll-free number to miners and mine operators nationwide. Federal investigators are distributing the items as they perform their normal inspections.

Apart from using the number to report already hazardous conditions at a mine, the number should also be used to report potential hazardous conditions, as well as to report the location of old mine maps, impoundments and abandoned mines. All calls to the hotline remain confidential and anonymous if the caller so wishes.

The Mine Improvement and New Emergency Response (MINER) Act of 2006 included a provision that requires all mine operators to notify MSHA of all accidents that pose a reasonable risk of death within 15 minutes of when the operator realizes an accident has occurred. Violators risk a civil penalty ranging from \$5,000 to \$60,000.

With the unfortunate 146 coal mining deaths in the past five years in the U.S., a call for more caution and awareness on behalf of the federal government is not surprising. There have been 17 documented coal mine disasters resulting in five or more deaths since 1976, according to MSHA. The increased media coverage in the past five years has put these disasters on the display for the general American public, increasing awareness.

Source: The Mine Safety and Health Administration



**BIRMINGHAM RAIL & LOCOMOTIVE COMPANY**  
*Your single source for Rail & Locomotive Products*

Railroad Track Material  
Rails, Frogs, Switches  
Tie Plates, Wheel Stops  
Derails, Track Spikes  
Bumping Posts & Tools  
Wheel Recontouring  
Rebuilt Engines & Trucks  
Reconditioned Locomotives  
Replacement & Hard to Find Parts  
Locomotive Repairs & Inspection  
On-Site Locomotive Maintenance Programs

*For over 100 years Birmingham Rail & Locomotive Company has responded with superior quality and service to the industry.*

PO Box 530157 ■ Birmingham, AL 35253-0157  
205-424-7245 ■ 800-241-2260 ■ Fax 205-424-7436  
bhamrail@aol.com ■ www.bhamrail.com



## Distribution Division

### Innovation on Track

If more than a railcar rides on the performance of your track, Nortrak has the material solutions your track demands.

Your business depends upon your track's performance. At Nortrak, our people are the experts in track materials for any application. Mines, Ports, Transits, Railroads... with over 25 years of supplying trackwork, rails, ties and other track materials, we've learned each customer's track system requirements are unique.

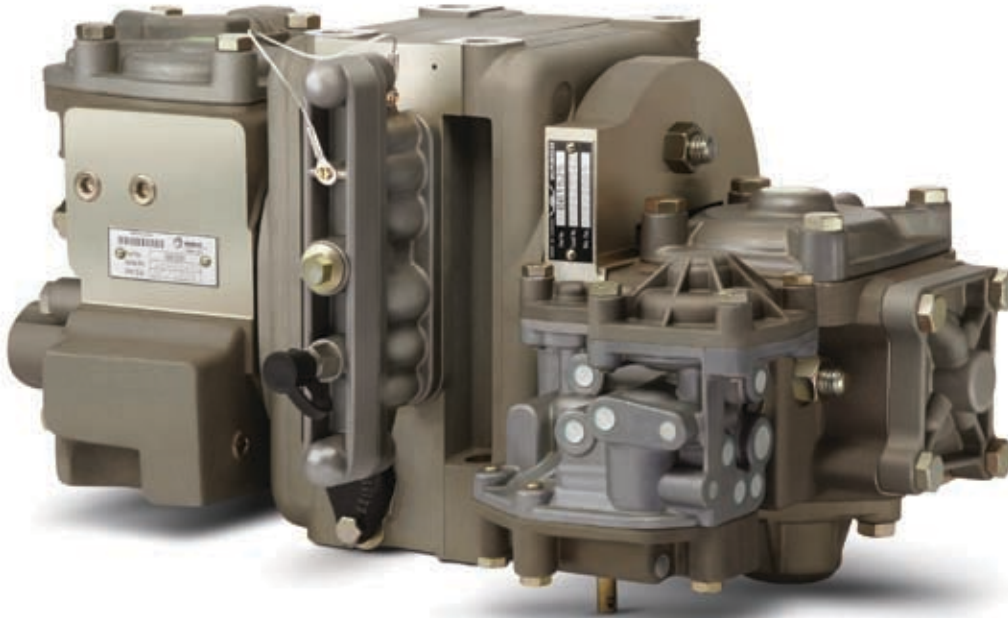
At Nortrak "Innovation" is knowing the right product for the right application. We work with you to qualify the products your track demands within your budget and business demands. With a high regard for customer service and quality products, we look forward to earning your business.

**VAE NORTRAK NORTH AMERICA, INC.**

[www.nortrak.com](http://www.nortrak.com) • [info@nortrak.com](mailto:info@nortrak.com)

**voestalpine**

ONE STEP AHEAD.



# Feature: Breaking Down Brakes

## *Choices Abound When Selecting Railcar Brake Components*

By Jason Connell, Wabtec

The old saying “variety is the spice of life” may well gain new meaning when it comes to selecting components for new and existing rail cars. Many manufacturers and products offer car owners tremendous flexibility in terms of price, performance and reliability. Advancements in these components continue to be made and play a key role in improving rail car capacity, efficiency and design.

### Control Valves

Originally developed by George Westinghouse, today’s braking systems come in two favors: pneumatic and electronically controlled pneumatic (ECP). Regardless of the chosen method, in the heart of each system remains a device called a control valve.

The pneumatic control valve, be it an ABDX or DB-60, remains the industry standard as it has since the introduction of the AB valve in 1933. Both valves control the freight car’s brakes in response to signals sent from the locomotive. ABDX and DB-60 valves are compatible with each other as well as their predecessors, including the ABD valve of the 1960s and the mid-1970s

ABDW. Today’s valves offer shorter stopping distances than previous models and weigh less due to their aluminum construction. To further protect it from the harsh railroad environment and increase reliability, the ABDX comes with a vibration protection package which virtually eliminates internal metal-to-metal component wear.

Additional features are available for both valves, such as ergonomically friendly single-sided pipe brackets and automated single car test systems. Wabtec’s four port system remains the most robust and comprehensive system available because it allows the test device to monitor four key pressures, much unlike other devices which only measure one or two.

Wabtec’s method also allows the test to be completed in roughly half the time of a standard test.

ECP represents the industry’s newest braking equipment and it offers features that traditional pneumatic valves cannot match. Because communication between the locomotive and the freight car is electronic, ECP brakes apply faster and release faster than their pneumatic counterparts. This translates into shorter stopping distances and less time spent waiting for the brakes to recharge after an application. ECP brakes can also be gradually applied and released unlike conventional pneumatics that can be graduated on but must be directly and completely released.

**>>feature: breaking down brakes**

In the future, ECP will likely offer car owners additional features including brake system health monitoring, ride quality feedback and cargo monitoring.

ECP currently comes in two flavors: overlay and standalone. Overlay systems incorporate ECP capability into the conventional pneumatic system. This offers car owners the ability to have cars that can be operated in either type of train, ECP or conventional pneumatic. Supporters of overlay systems value the flexibility the system offers: they can reap the benefits ECP offers when operated in an all-ECP train, yet retain the ability to use the cars in conventional trains for maintenance and capacity purposes. Opponents of overlay systems cite

higher initial costs as a major drawback and also claim that dual mode cars may not be operated in ECP mode very often precisely because they can be operated conventionally.

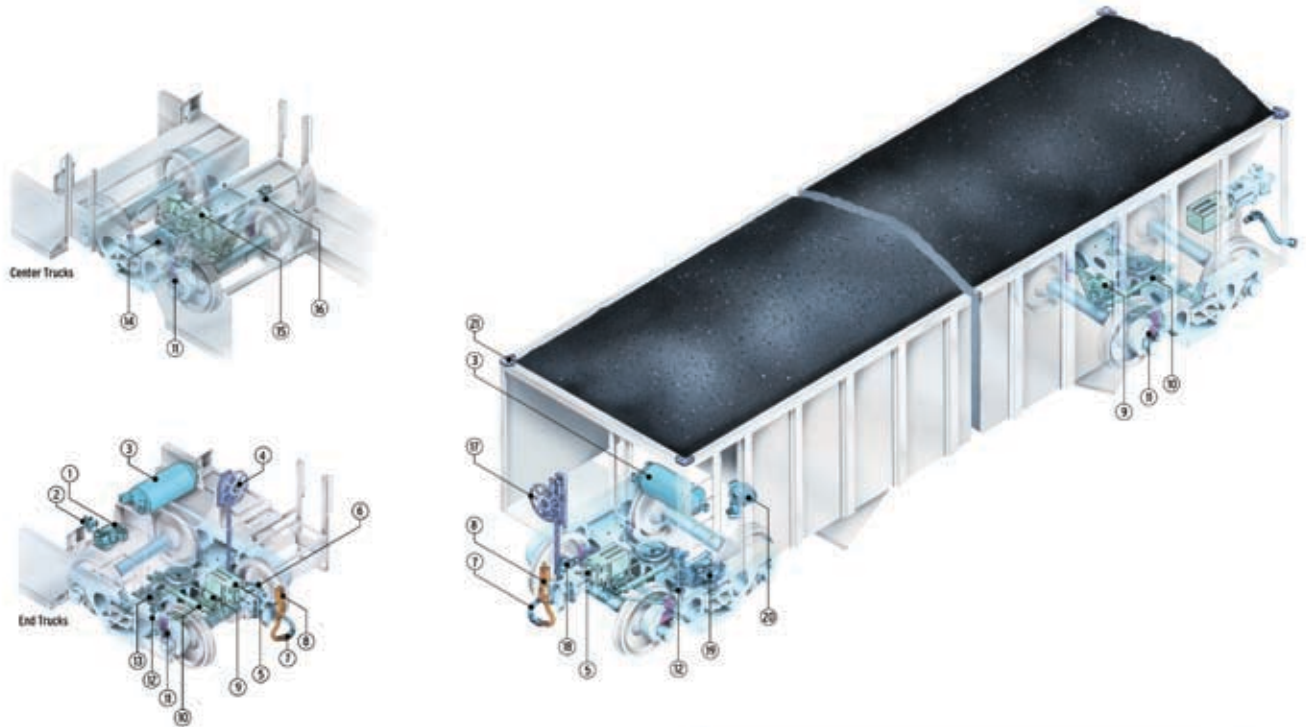
Standalone systems are not compatible with non-ECP equipped cars and locomotives. For this reason, the cars and locomotive must stay together in order to operate. Standalone supporters claim that this gives hauling railroads added incentives to ensure that ECP-equipped locomotives are available to haul the trains and that the railcars stay together.

**Empty/Load Equipment**

Aside from the control valve, no other component affects braking performance

as much as empty/load equipment. Aply named, empty/load devices sense whether a car is empty or loaded and apply a proportionately reduced brake application to empty cars. This ensures that the retardation force is uniformly applied throughout the train, minimizing slack action. The devices also help car designers create lighter weight cars with larger carrying capacities without fear of applying a fully loaded brake to an empty car and thus avoiding sliding wheel damage during braking.

Empty/load equipment comes in both slopeshet and body mounted configurations. Slopeshet models directly sense the presence and absence of lading to determine whether or not the car is



FREIGHT CAR EQUIPMENT:	
1	ABDX-L® Freight Brake Control Valve*
2	Dirt Collector & Cut-Out Cock
3	Two-Compartment Reservoir
4	Hand Brake
5	Draft Gear
6	Brake Pipe End Cock
7	Hose & Coupling
8	TrainLink® End-of-Train Device
9	Truck-Mounted Brake Assembly (TMX® & UBK®) Schoeffer Conventional Rigging Kits, Brackets, Braces, Levers, Rods & Hangers (not shown)
10	Double-Acting Self-Adjusting Slack Adjuster
11	Brake Shoe
12	Retaining Valve
13	ELX-B™ Empty/Load Valve
14	ELX-U™ Empty/Load Valve
15	SAC-1 Spherical Articulated Connector
16	VX Vent Valve
17	Release and Hold Hand Brake
18	1-1/4" DYNABALL Angle Cock
19	ABDX® Freight Brake Control Valve Mounted on Single-Sided Pipe Bracket* ECP Overlay Manifold (not shown)
20	ELX-5™ Empty/Load Valve
	Brake Cylinder Monitoring Taps and Fittings (not shown)
21	Corner Caps

\* Can be equipped with access plate and/or heater for automated slope car testing.

**>>feature:** breaking down breaks

loaded while body mounted devices measure truck spring deflection. Both designs are available in a variety of proportioning formats ranging from 30 percent to 60 percent, meaning that between 30 percent and 60 percent of the full braking pressure is employed when the car is braked empty.

Empty/load equipment is very important in emergency brake applications since braking forces are the highest during this type of braking. Empty/load equipment is also important for ECP applications because even though the ECP valve can modulate the amount of braking performed while operating in ECP mode, the back up, or failsafe, mode remains a pneumatically applied emergency brake application which may cause wheel damage on cars having an inoperative ECP system and no empty/load.

### Foundation Brake Rigging and Truck Mounted Brake Systems

Another choice car owners make is the type of brake rigging used on their cars.

The classical approach uses a system of rods and levers to transmit the braking force from the brake cylinder to the brake shoes. Tried and true, these mechanical linkages, also called foundation brake rigging or body mounted rigging, have been around as long as there have been brakes — air or manually applied — on cars. While these systems are highly reliable and mechanically sound, they weigh considerably more than newer alternatives that replace brake lever weight with additional lading capacity. These designs are mounted inside the railcar's trucks and are called truck mounted brakes.

Truck mounted brake systems represent a highly efficient means of translating pneumatic force into mechanical stopping power. Twenty percent more efficient than body mounted systems, truck mounted brakes fit within the truck envelope and contain a brake cylinder and slack adjuster. Because they eliminate most of a car's brake levers and rods, the system saves roughly 600 pounds per car, meaning that a 120-car train

equipped with truck mounted brakes transports around 36 more tons of lading than trains using body mounted brakes. Cardwell Westinghouse's UBX and TMX designs also distribute forces more evenly across the wheels which results in more even brake shoe wear.

### Hand Brakes

Another key component of any railcar braking system is the handbrake. Handbrakes are devices used by railroads to park a railcar when it will be left unattended. They're also used during grade and other various operations to help the train stay stationary. Although handbrakes pre-date air brakes, their designs continue to evolve with newer models boasting continuous release features and indicators showing whether or not the handbrake is applied. Cardwell Westinghouse's Release and Hold models give car owners peace of mind by ensuring that the hand brake remains in the released position once manually released, which helps reduce wheel damage caused by handbrakes that have not been fully released.

**Expertly interpreting lease and finance options in the railcar industry. This is what we do...*everyday.***

The David J. Joseph Company  
**Rail Equipment Group**



**Contact one of our Rail Equipment Group experts today for your railcar leasing and marketing needs at 513.419.6200.**

300 Pike Street, Cincinnati, Ohio 45202 • [info@djj.com](mailto:info@djj.com) • [www.djj.com](http://www.djj.com)

>>feature: breaking down breaks

## Brake Shoes

One of the most important elements of the entire braking system is the brake shoe, the friction block that actually makes the train stop.

The basic brake shoe offers users an economical way to brake a train. Newer shoes offer additional benefits including tread conditioning and higher fade resistance. Tread conditioning brake shoes, like the TreadGuard, help reduce wheel defects by using a special insert to scrub away minor wheel damage before they become condemnable.

Newer brake shoe designs use more advanced formulations to help reduce fading. The effectiveness of all brake shoes depends, in part, upon the shoe's temperature during the brake application. At higher temperatures, all brake shoes gradually lose their effectiveness. This is known as fading. With more advanced braking systems on the horizon, newer fade-resistant shoes are being developed to help improve train handling safety. This is very important on grades and will help ensure that users obtain the performance the brake system offers.

Some shoes, such as Railroad Friction Product's COBRA shoes, employ a unique design that minimizes the sides of the shoe from contacting the wheel flange resulting in longer life and reduced flange wear.

## Wrapping it All Up

All of the above components are engineered for a lifetime of service. However, like all fine machinery, periodic maintenance is desirable to keep the brake equipment in peak operating condition. Wabtec recommends that control valves be reconditioned after 12 years of service, and that's where Wabtec Global Services (WGS) stands ready to provide assistance. WGS can recondition virtually any mechanical, pneumatic or electronic component the railroad industry uses from its locations around North America, including four based in the U.S., two in Canada and one in Mexico. Top quality component combined with North America's most comprehensive component service network is one way Wabtec helps its customers keep the wheels of progress rolling.



Inside these cars ...

From oil rigs and corn fields to mills and production plants across the country, GATX railcars move the raw materials vital to manufacturing and industry. With a fleet of 160,000 railcars – including locomotives and specialty cars – GATX helps companies efficiently and economically transport raw materials whether leasing a single railcar or an entire fleet. GATX also provides flexible financing solutions and highly-customized fleet management services to complement the full array of railcar types.

**GATX**

For more information, visit [www.gatxrail.com](http://www.gatxrail.com)



# Undersea **Volcanic Rocks** May Offer Vast Repository for Greenhouse Gas

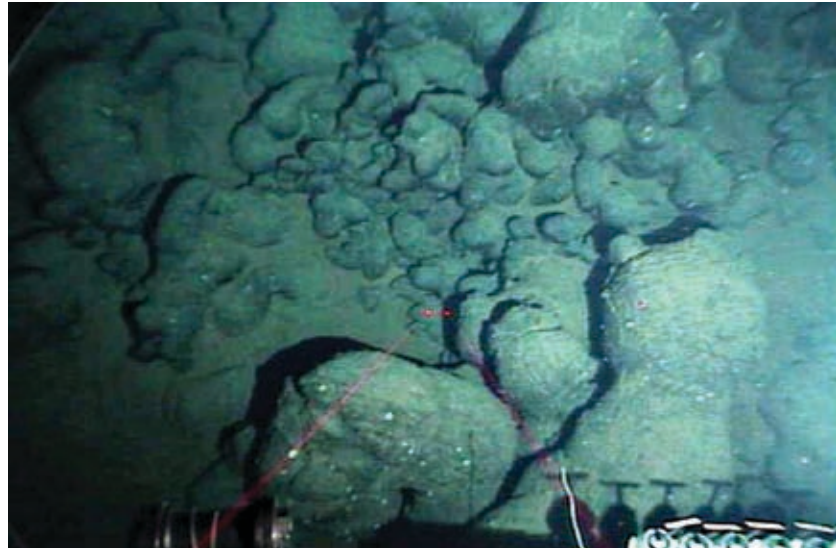
**A** group of scientists has used deep ocean-floor drilling and experiments to show that volcanic rocks off the West Coast and elsewhere might be used to securely imprison huge amounts of globe-warming carbon dioxide captured from power plants or other sources. In particular, they say that natural chemical reactions under 78,000 square kilometers (30,000 square miles) of ocean floor off California, Oregon, Washington and British Columbia could lock in as much as 150 years of U.S. CO<sub>2</sub> production. The paper, Carbon dioxide sequestration in deep-sea basalts, appears in the Proceedings of the National Academy of Sciences.

Interest in so-called carbon sequestration is growing worldwide. However, no large-scale projects are yet off the ground, and other geological settings could be problematic. For instance, the petroleum industry has been pumping CO<sub>2</sub> into voids left by old oil wells on a small scale, but some fear that these might eventually leak, putting gas back into the air and possibly endangering people nearby.

Lead author David Goldberg, a geophysicist at Columbia University's Lamont-Doherty Earth Observatory, called the study "the first good evidence that this kind of carbon burial is feasible."


"We are convinced that the sub-ocean floor is a significant part of the solution to the global climate problem," Goldberg said. "Basalt reservoirs are understudied. They are immense, accessible and well sealed—a huge prize in the search for viable options." One of the main advantages, he said, is a chemical process that takes place between basalt and pumped-in liquid CO<sub>2</sub> that would form a solid, nontoxic mineral.

In their paper, Goldberg and his colleagues Taro Takahashi and Angela Slagle used previous deep-ocean drilling studies of the Juan de Fuca plate, some 100 miles off



Basalts on seafloor near Juan de Fuca Ridge. Image shows about 3 by 4.5 feet.

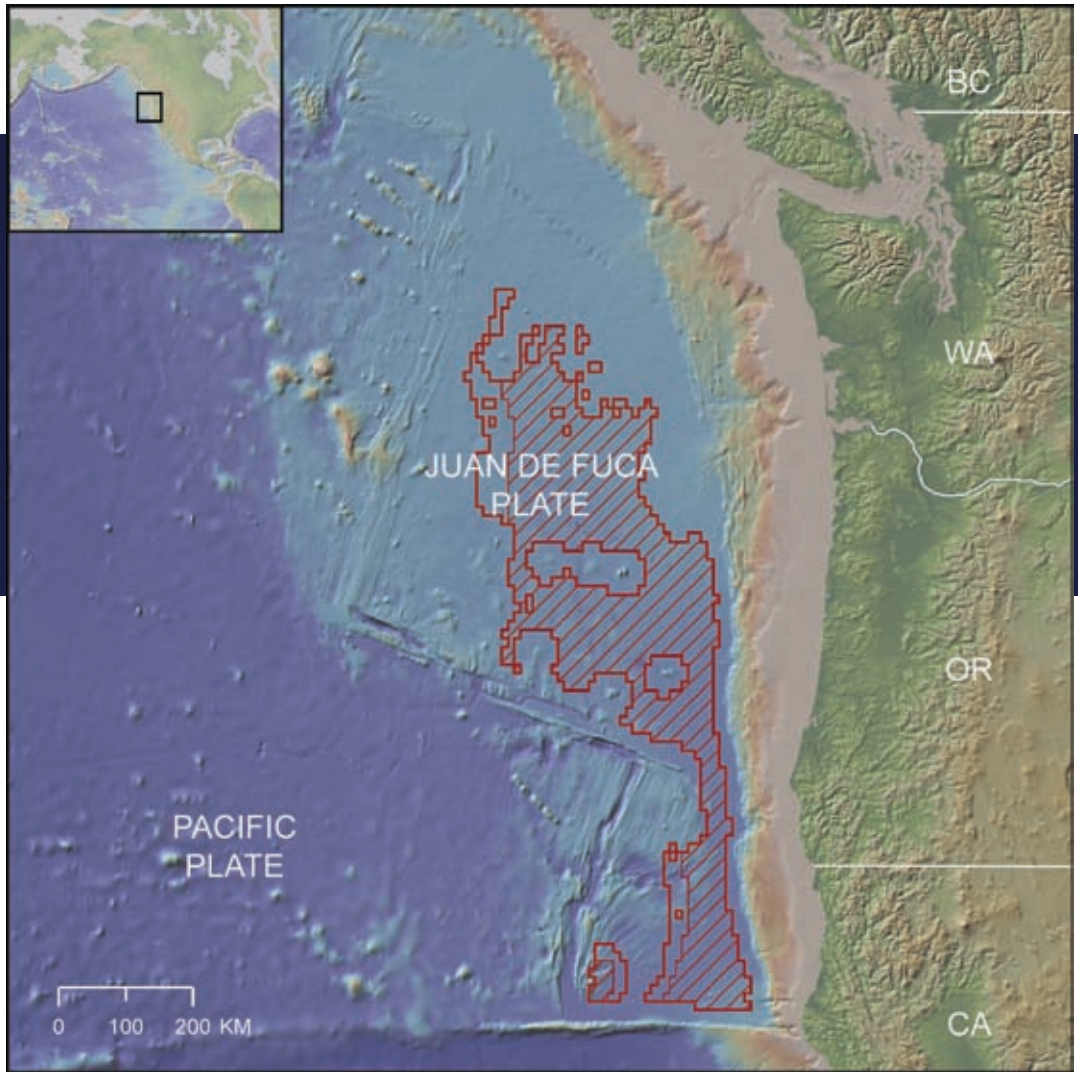
Bringing energy to our lives.



**Alpha Natural Resources**

One Alpha Place  
P.O. Box 2345  
Abingdon, Virginia 24212  
276-619-4410  
[www.alphanr.com](http://www.alphanr.com)

Deep-sea basalt region for CO<sub>2</sub> burial. Red outline shows where water depth exceeds 2,700 meters and sediment thickness exceeds 200 meters; hatched areas show where sediment thickness exceeds 300 meters. Seamounts and areas near plate boundaries or continental shelf are excluded.



the Pacific coast, to chart a vast basalt formation that they say could be suitable for such pumping. Basalt, the basic stuff of the ocean floors, is hardened lava erupted from undersea fissures and volcanoes. In this region, much of it lies under some 2,700 meters (8,850 feet) of water, and 200 meters (650 feet) or more of overlying fine-grained sediment. Drilling by the Integrated Ocean Drilling Program has shown the rock is honeycombed with watery channels and pores that would provide room for liquid CO<sub>2</sub> pumped down under high pressure. The scientists have mapped out specific areas that they say are isolated from earthquakes, hydrothermal vents or other factors that might upset the system.

Ongoing experiments by Lamont scientists on land have shown that when CO<sub>2</sub> is combined with basalt, the two naturally react to create a solid carbonate—basically, chalk. Later this year, a separate team headed by Lamont geochemist Juerg Matter will begin pumping CO<sub>2</sub> into a land-bound basalt formation at a power plant near Reykjavik, Iceland—the first such large-scale demonstration. Basalts lie at or near the surfaces of other land areas including the northeast United States; the Caribbean; north and south Africa; and southeast Asia.

Goldberg said that undersea basalts, which are widespread, may be bigger and better than ones on land. At the depths studied, any CO<sub>2</sub> that does not react with the rock will be heavier than seawater, and thus unable to rise. And in places like the Juan de Fuca, even if some did escape the rock, it would hit the overlying impermeable cap of clayey sediment.

Skeptics point out that getting the CO<sub>2</sub> to such sites could be expensive and tricky. But Goldberg said the West Coast formations should be close enough to the land for delivery by pipelines or tankers. He called on government to study the details of how the idea might work, and whether it would be economically feasible. The U.S. currently spends about \$40 million a year studying carbon sequestration, but nearly all of that goes to land-based research. “Forty million is about the opening-day box office for ‘Finding Nemo,’” Goldberg said. “We need policy change now to energize research beyond our coastlines.”

*This article was reprinted with permission from The Earth Institute at Columbia University*

**Railcar Repair**



**Wheelset Services**



**Tank Car Repair**



**Bearings**



**Wheels**



**Locomotive Parts & Repair**



**Railcar Parts**



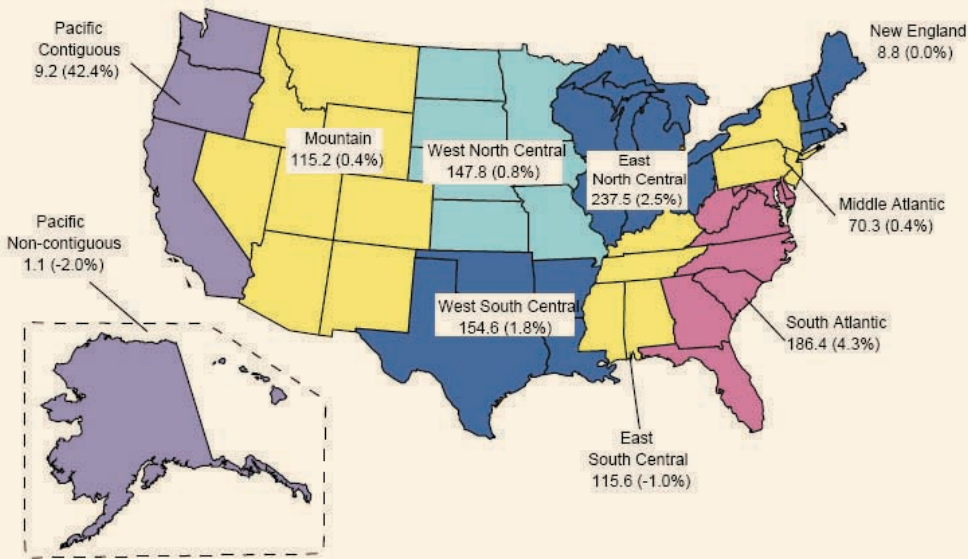
**Our integrated products and services, combined with our strategically located facilities, set us apart in the industry. Call us today and put the power of Progress to work for you.**

**800-476-8769**

**[www.progressrail.com](http://www.progressrail.com)**

# by the Numbers

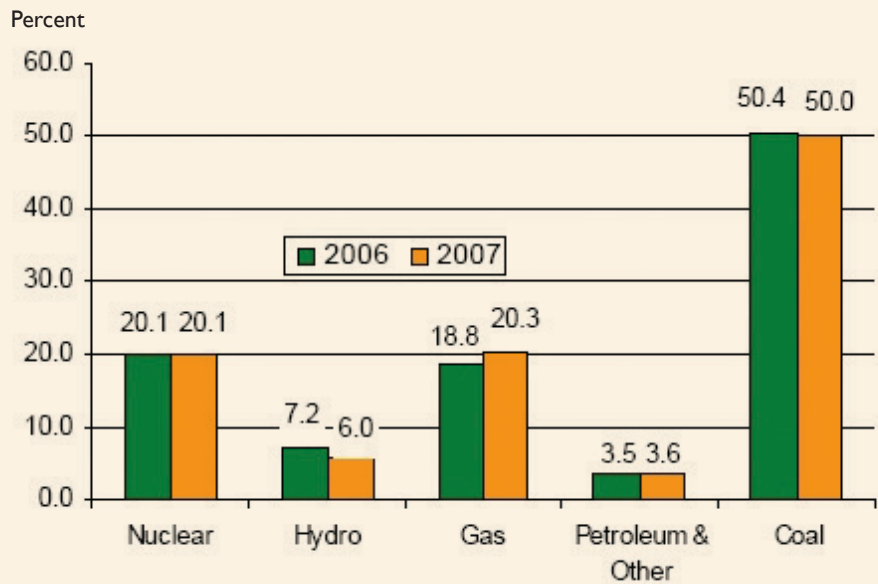
In April, the Energy Information Administration released the 2007 review on U.S. coal supply and demand. They concluded that the country experienced record consumption but lower coal production. As for 2008, the EIA foresees that coal consumption will be higher due to the increasing demand for energy and the continued growth in coal exports. Below are some of the energy results.



U.S. Total = 1,026.5 (-1.1%).

**Electric Power Sector Consumption of Coal by Census Region, 2007 (Million Short Tons and Percent Change from 2006).**

**Share of Electric Power Sector Net Generation by Energy Source, 2006 vs. 2007.**



Source: Energy Information Administration, Form EIA-906, "Power Plant Report."

# Implementing Wheel/Rail Measurement and Analysis Technology

By Bob Tuzik

 **interface**  
The Journal of Wheel/Rail Interaction

*This article was reprinted with permission from The Interface Journal*

Any examination of the systems in use to measure and monitor wheel/rail interaction requires a discussion of the challenges associated with implementing new and emerging technology. Several industry practitioners participated in such a discussion at Advanced Rail Management and Progressive Railroad-ing magazine's Wheel/Rail Interaction '08, the 14th annual seminar devoted to examining research and development efforts on freight and passenger systems.

The emergence of heavy axle loads and higher overall freight volumes in North America have had profound effects on research into wheel/rail interaction and the overall stress state of infrastructure and rolling stock, said Mike Franke, Amtrak's assistant vice president of state and commuter partnerships. "They have significantly changed the way we manage and organize track maintenance activities and they have leveraged technology as never before in day-to-day condition monitoring of equipment and track."

There is a great deal of interest from around the world in what we're doing in the way of wayside measurement and fault-detection, and how the information it generates can improve safety and the reliability of the rail network, he said.

## Technology Drivers

The drivers for new technology include improvements in service, safety, productivity, fuel efficiency, asset utilization and revenue growth, said Robert Blank, Norfolk Southern's director of research & tests. The technology needed to help achieve these goals is identified by various means at NS. Service metrics identify why trains are delayed or what incidents took place; incident reports identify rail and wheel failures. "We also look at where we're spending maintenance dollars, and how we're meeting safety and service expectations," Blank said.

NS is implementing ECP (electronically controlled pneumatic) braking technology on its coal car fleet, for example, to improve performance and reduce overall costs.

As part of its research effort, NS looks at work being done by other railroads. It also works with industry associations, such as the AAR and its TTCI and university affiliations, to identify technologies that can be applied to



Mike Franke, Amtrak.



railroad-related issues. NS also works closely with suppliers. “They are where a lot of the new technology comes from,” Blank said.

The NS R&T Department also works with internal stake-holders of new technology to identify the appropriate sites, infrastructure requirements (power, communications, access, etc.) and the service lanes that may be affected. “If we’re going to be stopping trains for high-impact wheels, for example, we want to know what effect it’s going to have on overall operations and service commitments,” Blank said. NS also determines which departments’ budgets will be affected and which department will be responsible for maintenance. Costs and benefits must be identified in order to compete among hundreds of other projects for funding. Where tangible benefits cannot be identified but a compelling case can be made to introduce a new technology, the finance group will sometimes give the go-ahead for “research,” he said.

Once a project is approved, implementation typically requires extensive communication between R&T, Maintenance, Communications and Signals, Mechanical, Transportation and the IT Departments. “Our IT people want to ensure that the data and data transmission are secure.”

Post-deployment, NS maintains ongoing effort to quantify the benefits of the technology and to address the root causes of the problems that it identifies. “The work that the Wheel Defect Prevention Research Consortium is doing to determine the root causes of high-impact wheels and what can be done to reduce them has come from this,” he said. Through the Advanced Technology Safety Initiative (ATSI), NS, along with BNSF and other Class I railways, is working to reconcile issues relating to cost/benefit issues between railroads and private car owners.



Robert Blank, Norfolk Southern.

### ■ Finding the ‘Win-Win’

“We are trying to use technology — especially with ATSI — to find that ‘win-win’ between the railroads and the private car fleet,” said Lisa Stabler, BNSF’s assistant vice president for quality and reliability engineering.

Railroads are focusing on situations in which they can provide information that car owners can use to perform maintenance that will enable the car to make it to its next maintenance cycle. Instead of dealing with the “lose-lose” of who is going to fix the WILD-identified wheel, railroads and car owners are looking for the “win-win” associated with identifying wheels that the WILD network has predicted will generate high-impact loadings in the near future, and replacing them while the car is in the shop for scheduled maintenance.



Lisa Stabler, BNSF.

BNSF began implementing various wayside technologies in part to reduce the number of mechanical-caused derailments. One derailment that occurred in 2000 played a significant role in the development of BNSF’s widespread wayside detection systems. This low rail rollover derailment was important because it occurred 241 miles beyond an experimental truck-performance detector (TPD) that the train had recently passed. Data from the TPD showed higher L/V forces at the end of the train,

where the derailment began. We asked ourselves, Stabler said, if we could have prevented this derailment if the TPD had been in a production rather than a research environment.

Along the way to answering that question, BNSF’s wayside detector network has grown from its initial network of six stand-alone detectors, using two different technologies, to 72 stand-alone detectors, using 12 different technologies. (BNSF also employs a network of 763 warm-bearing detectors.)

Still, competing for resources to establish and expand effective wayside measurement and monitoring programs is an ongoing challenge. Showing management some of the data or pictures identified by detector systems that otherwise would have caused a derailment or service interruption is a good way to get management’s support, Stabler said. One you obtain that support, she said, “you’d better be able to show results.”

That’s why BNSF and the Six Sigma group, which Stabler leads, focus on “validation and quantification” when selecting detector systems. The first thing we do after procuring a detector is determine that it can demonstrate an acceptable R&R (repeatable and reproducible) gauge, Stabler said. After we’ve demonstrated that it’s repeatable and reproducible, we make sure that that it actually does what it’s supposed to do. Before we call it “good,” the car inspector — the person who’s going to bad-order the car — has to agree that the detector works. “Field concurrence is critical,” she said.

Dataflow is another critical aspect of wayside detection technology in that railways have begun making decisions about whether a car that is flagged for maintenance must be set out immediately or if it can be bad-ordered and sent to the next mechanical repair facility. This, along with the associated repair work and billing, become part of the car-repair history system.

In the end, it all comes down to dollars. “While we never put a price on safety, we understand that there is a cost associated with derailments,” Stabler said.

“We’re all about showing that the money spent on wayside detector technology is generating a return and that we’re spending BNSF’s money wisely.”

## ■ Clearing the Hurdles

Ryan McWilliams, vice president of technology & business development at Salient Systems, Inc., looked at the hurdles to implementing wayside measurement and performance-monitoring technology from the suppliers’ perspective.

Wheel Impact Load Detector (WILD) technology, which was developed to identify high-impact wheel loads that were causing track damage, was the first wayside technology adopted as an industry standard, McWilliams said. The first commercial WILD systems were installed in 1985. Significant implementation began in 1993 with the widespread implementation of AEI tags, which are key to monitoring the performance of individual cars. By 1995, there was enough confidence in the systems for the AAR to implement an interchange rule allowing their use. Beginning in 2005, hand-gauge measurements were no longer required for verification.

Today, there are more than 200 WILD systems on six continents; more than 100 of them are in North America. Development, acceptance and implementation was a slow process, however, requiring 20 years for the industry to gain confidence in the system. While the end result is good, McWilliams said, 20-year product development cycles can be prohibitively expensive. Fortunately, he said, suppliers have found ways to develop partnerships with individual railroads and the industry, overall.

The next technological and implementation frontiers include longitudinal rail stress monitoring, which monitors the rail neutral temperature to warn of impending buckling hazards and to alert railway maintenance departments when to apply a slow order. Suppliers have had to wait for enabling technologies, such as battery optimization, better communications links, and wireless transmission, in order to produce a system with costs that were low enough for railroads to actually implement and use. “We’re now able to



Ryan McWilliams, Salien Systems, Inc.

produce a rail-mounted module that would have been technologically impossible 10 years ago," McWilliams said.

Identification and measurement of difficult-to-detect subsurface cracks in wheels and axles and other components represents the next frontier. Salient Systems and other suppliers are investigating the use of X-ray, ultrasonic and other technologies to identify an efficient, cost-effective way to detect sub-surface cracks in critical components.

The session moderator, Amtrak's Mike Franke, pointed out that despite the needs that have been identified and the benefits that have been shown, the railway industry's expenditure for research on new technology continues to be among the lowest of any developed industry.

"We do have an industry research effort through the AAR and

FRA that helps supplement what individual railroads contribute to research," NS's Bob Blank said. While it's a struggle to increase research spending, due in part to the capital-intensive nature of the industry, research budgets have been increasing in recent years, he said.

While agreeing with Blank and the other panelists assessments, BNSF's Lisa Stabler, a self-characterized "outsider" who came from the automotive industry, said that the railroad industry does itself a disservice by thinking that it doesn't move quickly. "I have seen more change in this industry in the past eight years than I saw in 20 years in the automotive industry. It's amazing how quickly this industry can move," she said. "It's an exciting time — a golden age for detector technology."

# LOCOMOTIVE REMOTE

## MU&Go

Take control of any situation!

- Single cabinet weighing less than 90 lbs.
- 10-12 minute setup
- Improve productivity and efficiency costs
- Works on any AAR MU equipped locomotive

**Reliable • Safe • Durable**

**CONTROL CHIEF**  
WIRELESS SOLUTIONS

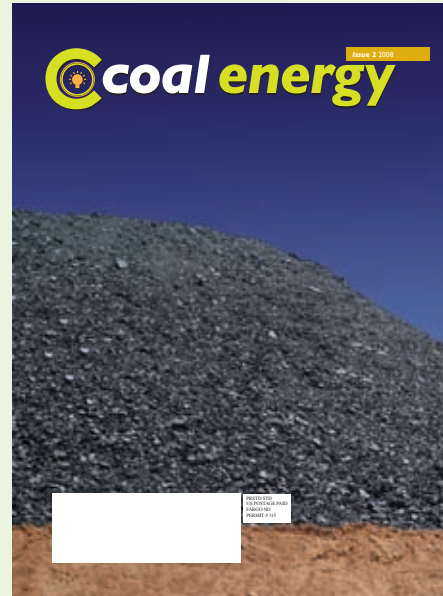
# Upcoming issue

Articles to look forward to in the next issue of Coal Energy:

**-Spotlight on China, the world's leader in terms of coal reserves, and what this means for the coal industry.**

**-A closer look at the obstacles in the way of carbon capture and sequestration, what companies and researchers to get the ball rolling**

If you have any story ideas you would like to see in the next issue, please send an e-mail to [vilmarie@martonickpublications.com](mailto:vilmarie@martonickpublications.com).



# Ad index

AKJ Industries, Inc. ....	OBC
Alpha Natural Resources .....	28
Arch Coal, Inc. ....	13
Birmingham Rail & Locomotive Co .....	22
Comet Industries, Inc. ....	09
Control Chief .....	35
GATX .....	27
HDR, Inc. ....	11
Miner Enterprises, Inc. ....	12
Mitsui Rail Capital .....	02
NexGen Coal Services, Ltd .....	17
Osmose RR Services, Inc .....	IFC
Progress Rail Services .....	30
Rail Link .....	21
Savage Industries, Inc. ....	19
SCH Terminal .....	09
The David J Joseph Company .....	26
Transportation Services, Inc. ....	20
VAE Nortrak .....	23
Wabtec .....	IBC



Martonick Publications, Inc.

Proud to be the Publisher of

**Coal Energy**

Martonick Publications, Inc. specializes in publications for associations and non-profit organizations. *We bring great publications to life!*

For information on all of our services, please contact us: [info@martonickpublications.com](mailto:info@martonickpublications.com).

Your Source For:

- Trade Publications
- Annual Reports
- Member Directories
- Newsletters
- Anniversary Publications
- Special Edition Magazines
- Conference Programs
- Show Guides
- Custom Publications

*Providing full editorial, sales, graphic design and distribution support on every project!*

[www.martonickpublications.com](http://www.martonickpublications.com)

# Keeping Your Coal Moving



## Highly Reliable Products

Brake Shoes  
Brake Cylinders  
End Cocks, Hoses, Couplings,  
Dirt Collectors  
Control Valves  
Draft Gears  
Hand Brakes  
Electronically Controlled  
Pneumatic Braking (ECP)  
Empty Load Valves  
Foundation Brake Rigging &  
Other Forged Components  
Retaining & Vent Valves  
Slack Adjusters  
Truck Mounted Brakes

## One Stop Shopping

Committed to helping you move coal quickly and efficiently, Wabtec Corporation offers highly engineered products and value-added services to increase your productivity.

## Unsurpassed Service

Centrally located throughout North America to reduce your transit time and shipment costs, Wabtec's seven service center locations offer OEM parts and reconditioning service to quickly restore factory performance. Wabtec's expert staff also offers technical support and training classes.

## Everything You Need

From supplying critical components on your new cars to maintaining the ones you already have, Wabtec offers you an unparalleled combination of products and services to keep your coal moving.

Call 1-888-264-0011



# ATTENTION: Cold Weather Transportation Bulletin



**It doesn't have to be this way!**

**NEW! FreeFlow™ Technology saves money and increases efficiency!**

In January of 2005 AKJ Industries encountered a very severe challenge at a clients' mine with 15 inches of rain, followed by a cold snap where the temperature ranged from +10° F to -10° F for three days. While mine personnel said that nothing they had ever used would have worked under these conditions, AKJ Industries asked ourselves the question,

**"Is there something better that  
AKJ Industries could offer our customers?"**

AKJ funded independent research to evaluate additives to improve side release products. This decision was made as use of an effective side release product is one of the most important facets of an effective freeze conditioning program.

## **RESULTS:**

- Shear force and viscosity testing showed that the FreeFlow™ SR-300 was **vastly superior** to products containing calcium chloride and **significantly better** than diethylene glycol based products.
- FreeFlow™ additive provides a **substantial improvement** in results and the application **rate is almost halved!** This was seen in **every case** where products containing the FreeFlow additive package were compared to the same materials without the additive package.

**Contact AKJ Industries TODAY and start using our technologies  
to save you money and enhance railcar unloading efficiency!**



phone: 239-939-1696  
email: [info@akjindustries.com](mailto:info@akjindustries.com)  
web: <http://www.akjindustries.com>