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The Magazine for Coal Mining and Processing Professionals

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Coal Age

FEATURE ARTICLES

- 21 Met Coal Demand Increases for India; Be Alert to Shipping Risks
- 24 Coal Markets Will Rebound in 2014
Supply and demand fundamentals work for the industry after huge rationalization in 2013
- 28 Simulator Training, Real Productivity
Master Driller Program comes to the U.S. after proven success in other countries
- 30 New Owner of Freedom Industries Must Face Fallout of West Virginia Chemical Spill
- 32 Polish Coal Industry Faces Tough Decisions
Accustomed to the props of socialism, mine operators are finding it hard to compete in the domestic market they used to serve
- 34 Pressurizing with Dust Collectors
Guidelines on how to apply a concept that is appropriate for mine and plant environments, where dust generated during crushing, screening, and conveying must be controlled to protect workers, office spaces and sensitive equipment

COAL IN THE NEWS

- 4 Westmoreland Acquires Sherritt's Coal Operations
- 4 Fourth Quarter Fatalities Set the Industry Back
- 6 Patriot Investing at Highland
- 8 Kentucky Officials Refuse to Give Up on Big Sandy
- 9 Coalview Finances Fine Coal Recovery Plant for TransAlta
- 10 Illinois Coal Production Exceeds 50 Million Tons
- 12 Lily Group Will Be Put Up for Auction
- 13 Michigan's DTE Energy Triumphs in Permit Challenge
- 14 Development of New Mine Will Start in 2014

WORLD NEWS

- 5 Peabody Enters JV with Shenhua Group
Bumi Renames Itself Asia Resources
- 6 Australian Court Backs Whitehaven's Maules Creek Mine
Indian Coal Ministry Plans March Coal Block Auction
- 8 NuCoal Angry over Confiscation of Coal Licenses
UK Takes Major Steps Forward on CCS

NEWS/4



BLASTHOLE DRILLING/28



POLAND/32



DUST CONTROL/34



THIS ISSUE

This month, Coal Age offers insights into what it thinks will happen in U.S. coal in 2014. On the cover, a unit train crosses the Yellowstone River near Waco, Mont. (Photo credit: Steve Crise/BNSF Railway)

DEPARTMENTS

- 2 Editorial
- 4 Coal in the News
- 5 World News
- 10 People
- 12 Calendar
- 13 Awards
- 14 Dateline Washington
- 16 Market Watch
- 21 Transport Tips
- 37 Operating Ideas
- 40 Suppliers News
- 42 Product News
- 45 Classified
- 48 Regulatory Updates

FUNDAMENTALS FOR COAL LOOK GOOD FOR 2014



BY STEVE FISCOR
/ EDITOR-IN-CHIEF

What do you call a ship full of climate researchers stranded in the ice at the South Pole? A good start to a new year. Seeing those folks entertain themselves on live television via Skype, one had to wonder what it's like when they are actually working. Is it that dissimilar? With a photo op like this, why didn't Al Gore and his minions seize the opportunity to rescue them? Probably because they saw the debacle further debunking global climate change.

Speaking of global climate change, how about that Packers game? Game time temperatures were threatening to unseat the "Ice Bowl of 1967." When Canadians are complaining about the weather, it's cold. No one in the Upper Midwest is talking about global climate change right now, but they will be in July and August.

Climate change humor aside, *Coal Age* has the good, the bad and the ugly this month. Let's start with the bad. In 2013, total U.S. coal production fell 20.7 million tons (2%) to 995.8 million tons. This is the first time in 20 years that figure has dropped below 1 billion tons. As readers will see on the top 10 chart on p. 7, Wyoming, West Virginia, and Kentucky were hit hardest falling 3.5%, 3.5% and 8.6%, respectively. For perspective, 3.5% in Wyoming is 14 million tons, while 3.5% in West Virginia is 4.2 million tons. In the end, it all equals out on a Btu basis, except the West Virginia tons likely represent more jobs in an area that desperately needs them. The market situation is addressed in-depth in the annual Forecast Survey, see p. 24.

The ugly: a chemical spill in Charleston, W. Va., further tarnishes the coal industry's image (See Environment, p. 30). When the news that 4-methylcyclohexane methanol (4-MHCM), a chemical used to process coal, had leaked into the Elk and Kanawha rivers, fouling the Charleston water system, people began to clear bottled water from the shelves. Even though the tap water still smelled like licorice, they said the water was OK. The coal industry quickly distanced itself from what was clearly a "chemical spill." The distinction as it turns out is not black and white. Had the good citizens of Charleston demanded that the owner of Freedom Industries be the first to drink the tap water, it would have been a coal operator.

Now the good news: All signs say that 2014 will be a good year for the coal industry in general. Yes, total production was down, but some states, such as Montana and those in the Illinois Basin, posted positive numbers. Looking at the bright side, the coal industry mined nearly 1 billion tons last year and *Coal Age* expects total production to grow by at least 27 million tons next year. Coal operators have more money in their capital budgets than last year. If they can justify the expense, projects are moving forward.

Utility coal consumption grew by 35 million tons or more in 2013 and that trend is likely to continue through 2014. Stockpiles at utilities are at two-year lows and the cold spell that has brutalized the Upper Midwest is sucking a lot of natural gas out of the market. Spot prices for coal are trending upward. When ratepayers get their utility bills, hopefully they will wake up and realize the Environmental Protection Agency should not dictate energy policy (See Dateline Washington, p. 14). In the meantime, coal operators need to make hay while the sun shines on the frozen tundra. Enjoy this edition of *Coal Age*.

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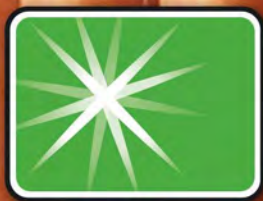
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WESTMORELAND ACQUIRES SHERRITT'S COAL OPERATIONS

Westmoreland Coal Co. entered into an agreement to acquire the Prairie and Mountain coal mining operations from Sherritt International Corp. for \$435 million. These include seven producing thermal coal mines in Canada's Alberta and Saskatchewan provinces, and a 50% interest in an activated carbon plant and a char production facility.

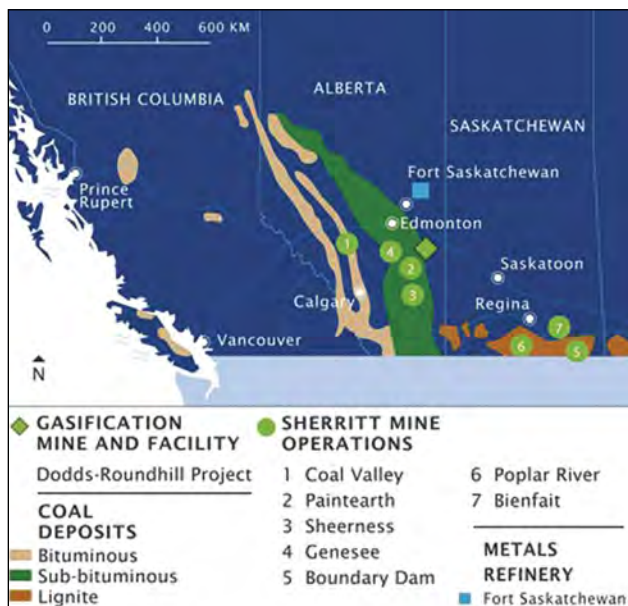
"This is an historic event for Westmoreland," said Westmoreland Chairman Keith E. Alessi. "The acquisition represents a transformation to our existing operations and expertise — this will more than double our business," in one of the world's most attractive mining jurisdictions.

The combined business will be the No. 6 North American coal producer, as measured by 2012 production, according to company officials. Additionally, activated carbon and char activities, although small in proportion to the coal business, "represent value-added product streams and provide expansion in the industrial environmental market and entrance into the consumer market," added Alessi.

Westmoreland CEO Robert P. King was similarly enthused. "This acquisition," he said, "significantly enhances our asset portfolio and positions us as the leading mine mouth coal producer in North America."

The Prairie operations consist of six operating surface mines within Alberta and Saskatchewan and control mining rights to 654 million coal tons of Q4 2012. In 2012, Prairie operations delivered 22 million tons of low-sulfur thermal coal to domestic utilities. Mountain operations consist of one surface mine in Alberta that produced 4 million tons of low-sulfur thermal coal in 2012, primarily for export, and one surface mine currently in reclamation. Mountain operations hold an aggregate reserve of 22 million coal tons of coal as of Q4 2012.

The transaction includes a char production facility, which sells to barbeque briquette producers, and a 50% partnership interest in an acti-



ated carbon plant with Cabot Corp. The char plant produced 130,000 char tons in 2012 and the activated carbon plant produced 14,500 tons of activated carbon in 2012.

Alliance Resource Partners Expects Continued Growth

With new mines in the hopper or ramping up, Alliance Resource Partners, the largest coal producer in the high-sulfur Illinois Basin (IB) and one of the most profitable coal companies in the U.S., is poised for continued strong growth in 2014 and beyond.



BREAKING NEWS

Fourth Quarter Fatalities Set the Industry Back

In 2013, 42 miners died in work-related accidents at the nation's mines, an increase from the 36 miners who died in 2012, according to preliminary data released by the Mine Safety and Health Administration (MSHA). While mining fatalities occurred at a record low rate for the first three quarters of 2013, during the fourth quarter of 2013, six coal miners and nine metal/nonmetal miners died in mining accidents, a significant increase from the same period in 2012, when four coal miners and two metal/nonmetal miners died.

Last year, there were 20 coal mining and 22 metal/nonmetal mining fatalities, compared with 20 and 16, respectively, in 2012. Four mining deaths in 2013 involved contractors (two each in coal and metal/non-metal), marking the fewest number of contractor deaths since MSHA began maintaining contractor data in 1983. A total of 14 coal mining deaths occurred underground and six occurred at surface operations. In

metal/nonmetal mining, five deaths occurred underground, and 17 occurred at surface operations.

The most common causes of mining accidents in 2013 involved machinery and powered haulage equipment. West Virginia had the most coal mining deaths, with six, and Kentucky had the most metal/nonmetal mining deaths, with four.

Preliminary fatality and injury rate data for the first three quarters of 2013 were 0.0112 and 2.45, respectively, below the rates for the same period in 2012, which marked the lowest such rates recorded in a calendar year in mining history. [Note: Rates are determined by the number of fatalities or injuries per 200,000 hours worked. Rates for calendar year 2013, which are calculated using operator-reported employment hours, are not yet available.]

For fiscal year 2013 (October 1, 2012, through September 30, 2013), preliminary data indicated a record-low fatality rate of 0.0104 and injury rate of 2.42, as well as the fewest number of mining deaths at 33.

TOP 10 COAL-PRODUCING STATES

(in Thousand Short Tons)
Year End 2013

	2013	2012	% Change
Wyoming	387,413	401,442	-3.5
West Virginia	116,239	120,449	-3.5
Kentucky	83,098	90,942	-8.6
Pennsylvania	54,958	55,506	-1.0
Illinois	52,772	48,763	8.2
Texas	43,119	44,178	-2.4
Montana	42,233	36,694	15.1
Indiana	38,702	36,720	8.2
Ohio	27,429	26,430	4.1
North Dakota	27,314	27,529	-0.8
U.S. Total	995,770	1,016,458	-2.0

The Tulsa, Okla.-based company expects to produce about 40 million tons of coal in 2014, eclipsing its estimated total of 39 million tons in 2013. By 2016, Alliance said its annual output should hover around 50 million tons.

The forecasted increases mainly are attributed to two new underground thermal coal IB mines that should begin to hit their stride by late 2014 — Gibson South near Princeton in Gibson County, Ind., and White Oak No. 1 near McLeansboro in Hamilton County, Ill. Once in full operation, the two mines are projected to add more than 10 million tons of additional production annually, helping Alliance to solidify its position as a low-cost producer.

White Oak No. 1 began producing limited amounts of coal in 2013 and is operated by privately owned White Oak Resources LLC, formed in 2006 to access more than 1.3 billion tons of recoverable coal reserves in Hamilton County. Alliance took a major financial interest in White Oak 1 several years ago and essentially has the right to market the mine's coal. The mine's new longwall system is scheduled to start running by next summer or fall, at which time production should ramp up rapidly to more than 6 million tons a year.

At least some of Gibson South's coal reserves have lower sulfur content than traditional IB coal and, as a result, the mine is designed to serve both foreign and domestic markets. Gibson South, a continuous miner operation, eventually could turn out slightly more than 5 million tons a year at peak production.

"We continue to see growth opportunities in 2014, 2015 and 2016," said Brian Cantrell, Alliance's senior vice president and chief financial officer, at the Cowen Global Metals Mining Materials Conference in New York in December. "We think fossil fuels will be the predominant power source for electrical generation in this country for quite some time. We expect natural gas will stay at price levels that will allow our company to compete."

In fact, with natural gas recently hitting \$4.50 a million British thermal units on the New York Mercantile Exchange, some analysts predict electric utilities in the U.S. will switch back to coal from gas in 2014.

Cantrell added, "We continue to see opportunities for growth even in a flat market for demand."

Much of that optimism is rooted in Alliance's presence in the IB. In 2013, 82% of the company's production came from mines in

WORLD NEWS **Peabody Enters JV with Shenhua Group**

Two of the world's largest coal producers, Peabody Energy and China's Shenhua Group Corp. Ltd., have announced a Joint Venture (JV) agreement creating the Sino-Pacific Coal Trading Corp. Pte. Ltd. The Singapore-based company will supply Shenhua with thermal coal from Peabody's global production and coal trading platforms. Peabody President, Asia and Trading, Christopher J. Hagedorn said the new 50:50 JV represents a milestone in Peabody's regional growth. "Globally, Shenhua is one of the world's largest importers of thermal coal and this will give Peabody a priority position to supply Shenhua's growing needs," said Hagedorn. "Annual world coal demand is expected to grow by 1.2 billion tons in the next five years, with more than 80% of growth in China and India." Subject to regulatory review, Sino-Pacific Coal is expected to begin operating in 2014, sourcing coal globally to supply Shenhua, which has more than 65 million gigawatts of installed power generation capacity.

Massive China First Project in Australia Gets EIS Approval

Waratah Coal's proposed \$6.4 billion "China First" coal mine, rail, infrastructure development and Queensland export facility — more commonly known as the Galilee Coal project — has received approval for its Environmental Impact Statement (EIS) from Australian commonwealth government officials. Managing Director Nui Harris said the EIS approval marked an important milestone. The Brisbane-based Waratah Coal, a subsidiary of Mineralogy Pty Ltd., plans to build a thermal coal project in the Galilee Basin coal region near Alpha, as part of its China First project. The mine will be linked to a proposed coal terminal at Abbot Point near Bowen by a new 453-km railway line, capable of carrying 400 million metric tons per year (mtpy).

Bumi Renames Itself Asia Resources

After a very public and bitter 18-month boardroom feud between company founders, coal miner Asia Resource Minerals Plc, formerly London-listed Bumi Plc, has named businessman Chris Walton as chair after splitting from its Indonesian partner at Q1 2013. Shareholders approved a \$501 million deal to separate from Indonesia's Bakrie family and change its name. Both sides had sought a split since 2012 after relations between co-founder Nathaniel Rothschild and the Bakrie clan soured amid financial probes in Asia and the U.K.; the company plans to return more than \$400 million in proceeds to shareholders.

German Court Supports RWE's Brown Coal Plan

As the European Union's economic powerhouse tilts toward greater coal use, Germany's Federal Constitutional Court has ruled in favor of brown coal mining for provider RWE AG. But relocation and compensation for residents near the electricity provider's Garzweiler mine, the justices ruled, should be finalized soon for a project potentially lasting through 2045. "Brown coal mining secures a sufficiently legal and sustainable public benefit," the court said in its ruling; judicial opposition could have spelled early closure for the mine and a key structural change for Germany's power generation mix. RWE operates thousands of megawatts in brown coal-to-power capacity at its core North-Rhine Westphalia region and burns up to 40 million tons annually.

Continued on p. 6...

Continued from p. 5...

Australian Court Backs Whitehaven's Maules Creek Mine

Whitehaven Coal has emerged victorious in its battle against environmental activists seeking to overturn Australian government approval of its leading growth project, the \$679 million Maules Creek mine. A federal court judge dismissed an injunction from a group of environmental activists. The decision paves the way for Whitehaven officials to begin construction of the 13-million-ton per year mine, due to commence selling metallurgical and thermal coal in Q1 2015;

The company secured environmental approval from the then-labor government to build Maules Creek in Q2 after first applying for permits in 2010. But approval was then stalled by the Northern Inland Council for the Environment, according to *Reuters*, with assertions the operation would breach federal environmental regulations. Canberra's new conservative coalition government, however, introduced amendments to environment law to ensure miners like Whitehaven would not face uncertainties of having government approvals overturned.

Colombia Suspends Drummond's Loading Operations

On Friday, January 3, the local environmental agency in Colombia's Magdalena province ordered Drummond to suspend loading of coal onto ships until it met a new law requiring the use of a conveyor belt instead of cranes. According to this provision, all ports, beginning January 1, are required to load ships using conveyors to avoid the risk of contamination and spills to the sea. The government has sought to tighten regulations for exporters after a Drummond barge sank, dumping coal into the Caribbean in Q4 2012.

Indian Coal Ministry Plans March Coal Block Auction

Under pressure from the prime minister's office, India's Ministry of Coal has sped up its plan to auction around 27 coal blocks, holding 3 billion metric tons (mt) of reserves in March. The auctions were to be held in January but got delayed after the ministry of the environment turned down the demand of the finance and coal ministries to issue letters of comfort to prospective bidders that it would give all the requisite approvals within a fixed time frame. Prospective bidders have argued that if they are expected to give performance guarantees that oblige them to pay penalties in case they delay in developing the mines, government agencies should also be held accountable if companies suffer losses on account of procedural delays. The finance ministry has been specific in demanding that all bidders come up with performance guarantees. Officials added that bidders would be asked to quote a percentage of the revenue share of each mine they would give to the government as their bids. Whoever offers a higher percentage of revenue will win the bid. The revenue will be determined by multiplying production with the average of five years of international prices of coal of similar calorific value.

Indonesia Sees Coal Production Growing

Coal production in Indonesia — a major thermal coal exporter — will keep growing next year as the country's miners increase their output to tap expected higher demand. Herman Kasih, deputy chairman of the Indonesian Coal Mining Association, said the country's coal production could hit 450 million tons in 2014. "Coal miners are

Continued on p. 8...

western Kentucky, southern Indiana and Illinois. Northern Appalachia contributed 13% with the remainder from central Appalachia.

Alliance also expects more production in 2014 from its Tunnel Ridge longwall mine in Pennsylvania and West Virginia. The mine began operating in 2012.

Cowen and Company, in a recent report, also was upbeat in its assessment of Alliance's future. Alliance is "set for strong growth in 2014 on the back of Gibson South, the continued Tunnel Ridge ramp, and the investments in White Oak" with the new longwall commissioning targeted for 2014, Cowen said.

Alliance's other major producing mines include River View, Dotiki, Hopkins County Coal, Warrior Coal and Onton No. 9 in western Kentucky, Gibson North in southern Indiana, and Pattiki in southern Illinois.

Patriot Investing at Highland

Fresh out of bankruptcy, Patriot Coal Corp. is sinking a new air shaft at its Highland No. 9 mine in western Kentucky, a move expected to increase the mine's production of high-sulfur thermal coal in 2014. The project coincides with the company's implementation of a "seven-day work week" at the continuous miner operation along the Henderson County-Union County border, some 25 miles southwest of Evansville, Ind., company spokeswoman Janine Orf said. To prepare for the new work schedule, Patriot is hiring approximately 90 miners, many of them previously employed at central Appalachian mines that have been idled during the past year.

The additional hirings/expansion at Highland 9 is another example of the continued rise of the high-sulfur Illinois Basin (IB) and coal industry decline in central Appalachia, where thousands of miners have lost their jobs at dozens of mines closed or significantly cut back over the past year or two, largely because of new federal Environmental Protection Agency rules and cheaper and more plentiful natural gas.

Highland 9 produced about 2.1 million tons of coal in the first nine months of 2013 from the western Kentucky No. 9 seam, according to the federal Mine Safety and Health Administration. The mine's total 2013 output was expected to be less than the 3.9 million tons it produced in 2012, but the new air shaft and work schedule are being counted on to bring 2014 production more in line with 2012.

Patriot filed for Chapter 11 bankruptcy reorganization in July 2012 in a St. Louis court and emerged from bankruptcy 17 months later on December 18. During its bankruptcy stay, Patriot significantly reduced its operating costs, achieving more than \$200 million in estimated annual cash savings. Knighthead Capital Management LLC is contributing \$250 million toward Patriot's \$545 million exit financing plan, with the remainder supplied by Patriot's former parent, Peabody Energy Corp., and Arch Coal Inc. Peabody is based in St. Louis, while Arch is headquartered in Creve Coeur, a St. Louis suburb.

Patriot also is expected to save \$130 million over the next four years under a revised labor agreement with the United Mine Workers of America. Patriot operates about 20 thermal and metallurgical mines in the IB and central Appalachia. The company has 1.8 billion tons of coal reserves.

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Continued from pg 6...

targeting higher production. There's growing demand in the global market, including from Japan, which will increase coal purchases after it shuts down its nuclear generated power," Kasih said. Indonesia's coal production is expected to reach 421 million tons for 2013, a 3.4% increase over 2012's 407 million tons.

NuCoal Angry over Confiscation of Coal Licenses

The owner of a Hunter Valley coal lease has reacted bitterly to the bid to confiscate the asset, insisting it was repeatedly denied procedural fairness and may seek financial compensation, according to Australia's *ABC News*. NuCoal was one of two companies, along with Cascade Coal, given until January 15 to show cause why they should not be stripped of licenses. That decision by Premier Barry O'Farrell followed a recommendation from the Independent Commission Against Corruption (ICAC). Gordon Galt, chairman of NuCoal, said the company had received limited opportunity to be heard and this recent refusal of an extension of time or specification of details is another denial of procedural fairness. ICAC said the license could be offered for sale again, possibly back to NuCoal, after it is confiscated.

Coal Mining at India's Dulanga to Begin in 2015

NTPC Ltd., India's biggest power generator, hopes to start coal production from the allotted Dulanga block by March 2015, according to the *Business Standard*. With a mineable reserve of 152 million metric tons (mt), the Dulanga block located in the Ib valley coalfields is linked to NTPC's 1,600-MW super thermal power station coming up at Darlipalli in Sundargarh district. The project is scheduled to be commissioned by 2018.

Peabody Energy Closes Wilkie Creek in Australia

Officials at Peabody Energy Corp. have announced they will cease production at the Wilkie Creek mine in Queensland's Surat Basin and will close the mine altogether by 2013's end; the 200 employees and contractors who work onsite have already been notified. Peabody will endeavor to redeploy workers to other projects, according to Australia President Charles Meintjes. "We are committed to minimizing the impact of the closure on our employees, their families and the local community," he said, "and we intend to work with employees regarding redeployment to other operations where possible."

UK Takes Major Steps Forward on CCS

Recent governmental funding commitments for carbon capture and storage (CCS) capitalize on the U.K.'s strong research and development base and geological capacity for storing carbon dioxide (CO₂). The U.K. Department of Energy and Climate Change (DECC) recently announced the award of a front-end engineering design (FEED) to the White Rose CCS Project at Drax power station in North Yorkshire. The FEED study will span two years, include a planned development of a CO₂ transportation and storage solution, and aim to solve issues needed before making a final investment decision on the construction of the £2 billion clean coal power plant with full CCS. The U.K. government also plans to complete feasibility works and identify options to take forward an industrial CCS network through the more than £10 million Tees Valley City Deal.



Kentucky Officials Refuse to Give Up on Big Sandy

Led by Kentucky Attorney General Jack Conway, some state officials are not giving up trying to save Kentucky Power Co.'s 1,078-megawatt Big Sandy power plant as a coal-burning facility that has helped to sustain coal mines and local economies in central Appalachia for decades.

As it currently stands, Kentucky Power, a subsidiary of Columbus, Ohio-based American Electric Power Co. (AEP), plans to retire an 800-megawatt coal unit at Big Sandy in 2015 and convert the plant's other 278-megawatt coal unit to natural gas in 2016. The utility's application to switch Unit 1 to gas is pending before the Kentucky Public Service Commission. A PSC decision is expected in early 2014.

Kentucky Power once proposed spending more than \$900 million to install scrubbers on Big Sandy, located near Louisa in Lawrence County, to reduce sulfur dioxide and mercury emissions to comply with new federal Environmental Protection Agency rules. But opposition to the more than 30% electricity rate increase the project would produce caused the company last year to scrap the pollution control retrofit and, instead, pursue a purchase of half of the 1,560-megawatt Mitchell coal plant on the Ohio River south of Moundsville, W. Va., from Ohio Power Co., an AEP affiliate.

On October 13, 2013, the PSC approved the 50% acquisition of Mitchell by Kentucky Power for about \$536 million.

The Mitchell transaction has angered some officials in eastern Kentucky including State Rep. Rocky Adkins, a Democrat and long-time vocal coal supporter, as well as county officials who fear a loss of power plant and mining jobs as well as local tax revenue once the Big Sandy retirement and conversion are completed later this decade. Big Sandy is Kentucky Power's only baseload power plant in the region.

Now, Conway, also a Democrat, is asking the Franklin County Circuit Court in Frankfort to vacate and set aside the PSC's Mitchell ruling on multiple legal grounds.

The Mitchell purchase "will place more than half a billion dollars into Kentucky Power's rate base and will ultimately raise consumers' electric rates by more than 20%," Conway said. "It will also transfer energy production to a neighboring state and leave Kentucky consumers paying the bill. That's just not right."

In its order, the PSC accepted Kentucky Power's assertion that the Mitchell acquisition was less costly than retrofitting Big Sandy with environmental controls.

Conway, though, contends the commission's determination was "unreasonable and unlawful" because it relied on evidence presented by Kentucky Power and AEP that could not be independently verified.

"The analysis used by Kentucky Power and accepted without independent verification by the commission is simply an 'apples to oranges' comparison and is not a reliable basis for the commission's decision," he said. "The commission should seek additional, independent information, if it is going to raise electric rates for consumers and eliminate Kentucky jobs."

Conway also claims the commission failed to consider the economic feasibility of Kentucky Power's plan and neglected the public policy interests of Kentucky, as expressed by the General Assembly. State legislators have held that the use of Kentucky coal and the

COALVIEW FINANCES FINE COAL RECOVERY PLANT FOR TRANSALTA

Coalview Ltd. LLC, a company that finances, designs and builds fine coal recovery plants to provide environmental solutions for mining property owners while recovering coal, has completed \$42 million of project financing for its subsidiary, Coalview Centralia LLC, to construct a waste processing and fine coal recovery plant in Centralia, Wash.

The \$42 million project was financed by lead investor, David A. Schwedel, a Miami, Fla.-based energy technology investor, and Coalview Investment Partners I LLC; \$26.5 million of Environmental Facilities Revenue Bonds issued by the Washington Economic Development Finance Authority, which creates no public debt and use no tax funds for repayment; and more than \$10 million of capital equipment contributions. Project implementation of the 200-ton-per-hour (tph) fine coal recovery plant began during December, and is scheduled to complete construction within the next 12 months.

“Our Coalview team has worked diligently to bring this project through to fruition,” said David A. Schwedel, director of Coalview. “We are grateful to the state of Washington for their cooperation, and for the assistance of our entire working group.”

Coalview Centralia expects to have more than 25 full-time personnel operating the plant. “Centralia has a highly qualified mining, administrative and finance talent pool, and we are looking forward to working with local constituents to move this process forward,” said David Henry, president, Coalview Recovery Group, the management company responsible for the project.

The plant is located at the Centralia mine, a former open-pit mine owned by TransAlta Corp. The mine was a captive coal operation supplying the nearby Centralia power plant. TransAlta purchased the mine and power plant from PacifiCorp in 2000. In 2006, mining operations ceased and the power plant now burns coal from the Powder River Basin. At the height of its production, the Centralia mine produced more than 4 million tpy and it’s believed the have more than 92 million tons of remaining reserves.

Coalview specializes in the removal and processing of impounded tailing from the coal preparation process, and is the only company with a sample extraction technique, an in-house laboratory, design and operating techniques to handle the entire project from start to finish.

Funding Environmental Solutions

In April 2011, Coalview acquired Beard Technologies, which was a contractor that built fine coal recovery plants for coal mine property owners. “Their business model revolved around supplying those fine coal recovery services,” Schwedel said. “The sole purpose of the

Beard Technologies acquisition was to enable us to build, own and operate those types of plants.” All of the projects listed in Table 1 prior to Centralia, are projects that were developed by Beard Technologies.

Prior to launching Coalview, Schwedel was a venture capitalist with a focus on the resource sector. His resource-related investment portfolio consisted of 85% mining and 15% oil and gas. In 2005, he was the lead investor for Synthesis Energy Systems. “We raised a lot of money for that group and subsequently brought in JPMorgan and Deutsche Bank for a large capital offering, and today Synthesis Energy Systems is a successful, publicly traded coal gasification company,” Schwedel said.

What piqued his interest about the Beard Technologies opportunity was being able to work with Dave Henry on these projects, as he is an expert in this area. “Dave Henry is well-known, highly respected, and well-regarded on a national level, and they were the national leaders in building fine coal recovery plants,” Schwedel said.

Henry specializes in the recovery and reclamation of coal slurry impoundments, testing and analysis of coal slurry reserves, slurry impoundment reclamation design and coal preparation. He has participated in thousands of tests to evaluate size distribution, deposition patterns, washability studies, facility circuit design and anticipated product quality. During his time with Beard Technologies, he focused on developing coal recovery operations through the use of advanced coal processing technologies and the production of high-grade fine coal products.

The motivating factor for pursuing this segment is two-fold, Schwedel explained. “A lot of coal property owners are finding themselves in very similar situations today,” Schwedel said. “They have a reclamation obligation that’s important to them. Oftentimes there is a parallel need with refuse impoundments reaching their useful lives and the mines are still operating full steam. By building a fine coal recovery plant, you can return the use of the impoundment back to the property owner while recovering the coal fines.”

What Schwedel brings to the table is the ability to finance these projects. “We have the ability to provide project financing around that. So these plants come at no cost to the property owner,” Schwedel said. “We provide all of the cost of project financing. We put up all of the money. We provide all of the equity. We work with debt providers, such as banks or other institutions, that issue debt for these types of opportunities, so that they property owners or operators do not have to come up with the money.”

Coalview provides the plant and they own the plant. “We process the slurry, recover the coal and sell it to the property owner through an offtake agreement to the property owner for the life of the project,” Schwedel said. “That’s the only thing we ask them for. It’s a unique way of approaching a problem that solves everyone’s issue.”

Schwedel successfully applied a similar formula for financing coal gasification projects. This is the first time he has applied the principles to fine coal recovery. “At the end of the day, it’s really a partnership,” Schwedel said. “When the coal markets retracted and we came through the backside of the recession, money was hard to come by and still is.” Coalview has the ability to build these projects and gain the project financing for them.



These before and after photos demonstrate what Coalview hopes to achieve.

continuation of jobs and other economic benefits constitute a legitimate government interest.

Allison Gardner Martin, Conway's press secretary, said her boss would like to see Big Sandy continue to burn coal. "Obviously, having the Big Sandy plant retrofitted is what is best for that region and the state," she said.

The circuit court is expected to issue a ruling by spring.

Illinois Coal Production Exceeds 50 Million Tons

With Christopher Cline's Foresight Energy Partners leading the way, Illinois coal production topped 50 million tons in 2013 for the first time in more than two decades, since soon after Congress passed the Clean Air Act Amendments in 1990.

According to the U.S. Energy Information Administration (EIA), the state's mines had turned out nearly 52 million tons in 2013 with

two weeks remaining in the year. That easily beat the 2012 production of 47 million tons.

Illinois mines are believed to be largely responsible for the 3.3% increase in coal output during the third quarter as reported by the EIA.

Phil Gonet, president of the Illinois Coal Association, said he was pleased his high-sulfur coal state reached a production benchmark it had been aiming for, but was hesitant to predict how much coal Illinois will mine in 2014.

Although several large underground mines, mainly owned by Foresight, still are ramping up in Illinois, the impact of the federal Environmental Protection Agency's new pollution control rules on the state's coal industry remains uncertain, he said. Illinois coal producers send most of their product out of state as little is burned in Illinois power plants. Increasingly, Illinois is making inroads in the southeastern U.S. thermal coal market, displacing coal from central Appalachia.



PEOPLE IN THE NEWS



Charles Snavelly

Arch Coal announced that *Charles G. Snavelly* has elected to retire as president of the company's eastern U.S. operations, following a 35-year career in the coal industry. Upon joining Arch in 2011, Snavelly helped lead the company's integration of ICG. He will continue serving Arch in a consultancy role through 2014. *Gary*



Gary Bennett

L. Bennett will succeed Snavelly as president of eastern operations. Bennett will have responsibility for all aspects of Arch's eastern subsidiary operations as well as the eastern engineering group. Bennett joined Arch as a senior engineer in 1990. He most recently served as vice president of operations support.

Coalview Ltd. appointed *Roger Fish, P.E.*, as its new president, CEO and director. He succeeded *David Schwedel*, interim president and CEO, the company's lead investor and founder, who will remain as executive director. For nearly a decade, Fish held various leadership positions at TransAlta Corp. including mine engineering director, mine director, director of North American mine operations, and most recently as the director, commercial operations (See Operating Ideas, p. 38).

Asia Resource Minerals (formerly Bumi) named *Chris Walton* chairman. *Nick Salmon* will become a non-executive director; *Julian Horn-Smith*, current deputy chairman, will step down.



Chris Walton



Oleg Korzhov

Mechel OAO appointed Senior Vice President for Economics and Management *Oleg Korzhov* as Mechel OAO's CEO. *Evgeny Mikhel*, who occupied this post since 2010, left the company. Korzhov has been the senior vice president for economics and management since October 2011.

James H. "Buck" Harless, a Gilbert, W.Va., native and major entrepreneur with significant holdings in mining, timber and manufacturing, died on January 1. He founded **International Industries Inc.** in 1947, and was a proud member of the West Virginia Coal Hall of Fame. Harless donated millions to the Mingo County community to provide local residents access to a community center that includes a movie theater, a swimming pool, exercise equipment, educational rooms and a community health center. In addition to his philanthropic efforts in Mingo County, Harless also was a major supporter of the state's universities. He was one of the first contributors to



James Harless

Marshall's Society of Yeager Scholars. The university also is home to the Buck Harless Student Athlete Program and the June Harless Center for Rural Educational Research and Development. He served as a member of the West Virginia University System Board of Trustees, was past chair of Marshall University Board of Advisors, a member of the Marshall University Foundation Board and was a member and past chair of the West Virginia University Foundation Board.



Michael Sutherlin

Joy Global elected *Edward (Ted) L. Doheny II* president CEO. Former President and CEO *Michael W. Sutherlin*, resigned and will retire on February 1. Doheny was previously elected to the company's board of directors. Most recently, Doheny served as executive vice president and president and COO of the Underground



Randal Baker

Equipment division since 2006. The company also announced that *Randal W. Baker* has been elected COO. Baker will oversee both the Surface Mining Equipment and the Underground Mining Equipment divisions. Baker previously served as president and COO of the Surface Mining division since 2009.

After more than 50 years in the underground mining industry, the last 22 years of which at **Cat** vis-à-vis Bucyrus, DBT, MTA, etc., *Harry Martin* has retired. After holding a number of senior management positions at some of Europe's most modern and efficient coal mines, he joined the Dowty Mining Machinery Co. in the United Kingdom before transferring to the United States division as general manager. Following a number of years as executive vice president of Dowty, he joined the Westfalia in a similar position in June 1991. He joined Mine Technik America, which was Deutsche Bergbau Technik (DBT), in 1995. He has been involved in directing sales and application design of many record-breaking longwall systems in many parts of the world including the U.S., Australia and China. He became a U.S. citizen in 1984 and after residing many years in Pittsburgh, Pa., he now lives in Daytona Beach, Fla.



Harry Martin

Timken appointed *Scott C. Deemer* account manager, Joy Global, for its U.S. original equipment business.

Former U.S. Secretary of Energy *Dr. Steven Chu* has joined the Board of Directors of **Inventys Thermal Technologies**, a company that has developed a breakthrough method for capturing CO₂ from coal and natural gas power plants.

Foresight's four Illinois mines — Sugar Camp Energy, Williamson Energy, Hillsboro Energy and Macoupin — produced more than 20 million tons in 2013, or roughly 40% of the state's

total. Depending on the strength of markets in 2014, Sugar Camp, Williamson and Hillsboro, in particular, are capable of growing production to 30 million tons or more.

Although Gonet was reticent to make a 2014 prediction, Illinois production conceivably could get a further boost this year once privately owned White Oak Resources begins operating a longwall mining system at its new White Oak No. 1 mine near McLeansboro in Hamilton County. Alliance Resource Partners has made a major financial investment in the mine.

Other new Illinois underground mines are planned by Hallador Energy's Sunrise Coal subsidiary and Arch Coal Inc., although they are not expected to begin producing coal in 2014.

Hallador/Sunrise are pursuing two new mines in east-central Illinois — Russellville and Bulldog, which together could produce more than 6 million tons annually.

Arch, meanwhile, still is expected to begin developing its new Lost Prairie mine in Perry County at some point, perhaps in 2014, perhaps in 2015. Lost Prairie's production is pegged at about 3 million tons a year as well.

While overall production was up in 2013, coal exports from Illinois most likely were down, Gonet said. In 2012, the state shipped more than 13 million tons overseas. But it probably did not reach that figure in 2013, he said.

Lily Group Will Be Put Up for Auction

Less than four months after it filed for bankruptcy, southern Indiana coal producer Lily Group Inc. was scheduled to go on the auction block in mid-January with at least two prospective purchasers expected to submit bids.

Lily filed for Chapter 11 bankruptcy reorganization in the U.S. Bankruptcy Court for the Southern District of Indiana in Indianapolis on September 23, barely a week after the company's only mine, the Landree continuous miner operation in Greene and Sullivan counties, was idled. Landree produced coal sporadically after its early 2013 startup, turning out only 21,674 tons through three quarters, according to the federal Mine Safety and Health Administration. The mine's high point came in the second quarter when it produced about half of its total tonnage for the year. Most of the roughly 40 or so miners who worked at Landree have been laid off.

Through its LC Energy Holdings LLC assignee, New York-based hedge fund Platinum Partners Credit Opportunities Master Fund LP was designated in late December by Lily as a qualified bidder in the January 14 auction set by Judge Frank J. Otte. The auction was to take place in the Indianapolis law office of Lily's legal counsel, Tucker Hester Baker and Krebs.

No "stalking horse" bidder was selected by the court's December 27 deadline, although that could change prior to the auction. Platinum Partners has served as Lily's debtor-in-possession lender since the coal company's bankruptcy filing.

Third Set Advisors LLC, formed by central Appalachian coal producer Quest Energy to acquire Lily, previously was identified as a likely bidder for Lily as well.

Third Set Advisors had objected to Lily's proposed bidding procedures.

In his order, the judge said the bidding procedures would not affect Indianapolis Power & Light Co.'s (IP&L) rights "to the

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CALENDAR OF EVENTS

February 6-7, 2014: *Coaltrans USA*, J.W. Marriott Marquis, Miami, Fla. Contact: www.coaltrans.com.

February 9-12, 2014: *40th Annual Conference on Explosives & Blasting Techniques*, Denver, Colo. Contact: International Society of Explosives Engineers; Tel: 440-349-4400; Web: www.isee.org.

February 18-20 2014: *National Weighing and Sampling Association (NW&SA) annual technical meeting*, Pittsburgh, Penn. Contact: Phil Carpentier; Email: ptcarpentier@comcast.net; Tel: 651-235-4726; Web: www.nwsassn.org.

February 23-26, 2014: *2014 SME Annual Meeting & Exhibit*, Salt Lake City, Utah. Contact: SME Meetings Department; Tel: 303-948-4200; Email: meetings@smenet.org; Web: www.smenet.org/meetings.

February 26-28, 2014: *Mississippi Valley Trade & Transport Council annual conference*, Omni Royal Orleans, New Orleans. Contact: Lisa McGoey; Tel: 504-566-1001; lmcgoey@mvttc.com; Web: www.mvttc.com.

March 4-8, 2014: *2014 CONEXPO-CON/AGG*, Las Vegas, Nevada. Contact: CONEXPO-CON/AGG Show Management; Tel: 1-800-867-6060 (USA and Canada), 1 414-298-4167 (International); Email: info@conexpoconagg.com; Web: www.conexpoconagg.com.

April 15-17, 2014: *116th National Western Mining Conference & Exhibition*, Colorado Convention Center, Denver, Colo. Contact: Jody Gibbs, Colorado Mining Association marketing director; Email: jgibbs@coloradomining.org; Tel: 303-575-9199.

April 29-May 1, 2014: *Coal Prep 2014*, Lexington, Ky. Contact: Penton; Tel: 800-925-5007; Web: www.coalprepshow.com.

May 11-14, 2014: *CIM 2014 Convention*, Vancouver, British Columbia. Contact: Lise Bujold, director of events; Tel: 514-939-2710 ext. 1308; Email: lbujold@cim.org; Web: www.cim.org/en.aspx.

June 12-13, 2014: *MEMSA Technical Symposium*, Sheraton Sand Key, Clearwater Beach, Fla. Contact: <http://www.miningelectrical.org/this-year-s-meeting.html>.

June 20-22, 2014: *Seminar on Sustainable Development in Indian Mineral & Earth Resources Sector*, New Delhi, India. Contact: Faculty of Engineering and Technology, AKS University; Web: www.aksuniversity.ac.in

June 29- July 1, 2014: *110th Rocky Mountain Coal Mining Institute Conference and Annual Meeting*, Keystone Resort and Lodge, Keystone, Colo. Contact: RMCMI; Tel: 303-948-3300; Fax: 303-954-9004; Email: mail@rmcmi.org; Web: www.rmcmi.org.

July 22-24, 2014: *Queensland Mining & Engineering Exhibition 2014*, Mackay Showground, Mackay, Queensland, Australia. Contact: Tel: +1 201-251-2600; Fax: +1 201 251 2760; Web: www.queenslandminingexpo.com.au.

August 2-8, 2014: *10th Mine Ventilation Congress*, Sun City, South Africa. Contact: IMVC 2014 Congress Secretariat; Tel: 27 (0)21 683 2934; Fax: 27 (0)21 683 0816; Email: info@imvc2014.org; Web: www.imvc2014.org.

October 29-31, 2014: *M&E Indonesia 2014*, Jakarta International Expo; Contact: Tel: +1 201-251-2600; Fax: +1 201 251 2760; Web: <http://www.miningandengineeringindo.com/>.

assumption or the assumption and assignment” of an amended three-year coal supply agreement with Lily.

IP&L, an AES Corp. subsidiary, has asked the court for permission to terminate a contract under which Lily originally was supposed to supply 200,000 tons of Landree coal in 2012 and 400,000 tons in both 2013 and 2014. The arrangement was amended several times, however, to reduce the scheduled amounts from Landree.

The utility has said it no longer has confidence that Lily can perform its contractual obligations.

Lily has said in court filings it is willing to see its assets for prices ranging from \$8 million to \$12 million. It was unclear how much the auction could earn for the company’s creditors.

According to the court-approved bidding procedures, Lily will review the bids and announce the highest and best bid as the “successful bid” and the next highest as the “runner-up bid.” The successful bidder is required to post a \$100,000 good faith deposit, “which shall be wired, in immediately available funds, to an escrow agent” of Lily’s choosing pursuant to an escrow agreement acceptable to Lily and the successful bidder.

On January 15, the judge will conduct a public hearing in Indianapolis on the sale motion and any objections raised as a result of the formal bidding process. The sale is expected to close during the first quarter of 2014.

Michigan’s DTE Energy Triumphs in Permit Challenge

Michigan’s largest coal-burning power plant, DTE Energy’s 3,000-megawatt Monroe station on the western shore of Lake Erie, appears to have a bright future after the company prevailed in a pollution control permit challenge by the Sierra Club. But the same may not be true for We Energies’ much smaller Presque Isle coal plant in the state’s Upper Peninsula (UP) after a joint venture agreement with Wolverine Power Cooperative collapsed in late December.

For good measure, Wolverine, a generation and transmission cooperative based in Cadillac, Mich., formally canceled a long-delayed 600-megawatt coal plant proposed for Rogers City, Mich. The \$2 billion Wolverine Clean Energy Venture project had been

on life support for several years before the co-op finally pulled the plug once and for all in December.

The flurry of late-year activity leaves the future of coal-fired generation in Michigan, a state that gets more than 50% of its electricity from coal, up in the air. The Sierra Club, as part of its national “Beyond Coal” campaign, has been leading the anti-coal fight in the state, arguing the estimated \$2 billion spent by Michigan utilities annually to purchase out-of-state coal — Michigan has no active coal mines — could be better used to create local jobs in the renewable energy and energy efficiency arenas.

The environmental group took aim at permits issued by the Michigan Department of Environmental Quality as part of DTE’s \$2 billion multiyear retrofit of Monroe to enable the plant to comply with new federal Environmental Protection Agency rules. The Sierra Club contended the changes at the plant violate the federal Clean Air Act, and asked the Michigan Court of Appeals to overturn a lower court ruling that upheld the permits.

Appellate court justices sided with DTE and DEQ, however. “The facts of the case do not support a finding that the [DEQ] erred,” the court said. “The permits allow for modifications that will reduce overall NOx emissions by more than 75% and SO₂ emissions by more than 90%.”

Monroe is one of the largest coal burners in the United States, annually consuming nearly 8 million tons of mostly low-sulfur Powder River Basin coal. The plant is expected to continue burning coal for many years to come. Meanwhile, Presque Isle’s days as the only baseload power plant in the sparsely populated UP may be numbered.

For at least the next year or so, We Energies will continue to operate Presque Isle under an arrangement with the Midwest Independent Transmission System Operator, which says the plant is needed to ensure reliability in the region.

Development of New Mine Will Start in 2014

Carbonado Coal plans this year to begin developing a new high-sulfur coal underground mine in Webster County, Ky., that should produce about 1 million tons annually for the U.S. electric utility market.



2014 AWARDS

Graham Honored with Ted Linde Leadership Award

Ronald “Ron” Graham received the 2013 Ted Linde Leadership Award, which recognizes active members of the ASTM E01 committee who have demonstrated outstanding leadership. This is Graham’s third award from the ASTM, having been previously recognized with the ASTM R. A. Glenn Award (Committee D05 on Coal and Coke) in 1992 and the ASTM Award of Merit in 1998.

Graham holds a Bachelor of Science degree in chemistry from West Virginia University, a Master of Science degree in chemistry from Youngstown State University and a Certificate of Quality Management in Manufacturing from DePaul University. He worked for AMAX Coal Company as a manager in their central laboratory for 11 years before joining SGS in 1987. Graham has held several management positions focused on ensuring SGS delivers high-level, standardized analysis, including his current position as global technical governance manager for SGS Minerals Services.

Graham has authored or co-authored 14 technical publications and has served as chairman of the ASTM Subcommittee E01.02 on Ores, Concentrates and Related Metallurgical Materials for the last 10 years. The Ted Linde Leadership Award recognizes his exemplary leadership skills and help in developing and maintaining more than 30 technically sound laboratory methods and practices. His role with SGS echoes this unwavering dedication to quality practices and global standards.

The Ted Linde Leadership Award was created in 1992 in memory of the late Ted Linde, the last chairman of Committee E02 on Analytical Atomic Spectroscopy. Linde was a key player in establishing Committee E01 on Analytical Chemistry for Metals, Ores, and Related Materials and was recognized for his outstanding leadership. The Ted Linde Leadership award is presented annually to one member of the ASTM E01 committee.

The new mine between Dixon and Sebree will produce coal from the No. 9 seam, the predominant coal seam in western Kentucky. The typical seam height is about 4.5 ft and the washed coal should average 12,200 Btu/lb and 2.5% sulfur. While development activity is planned for the mine site in 2014, Mike Bradford, Carbonado's general manager, said it is not certain that the new mine will be in production before the end of 2014.

The Madisonville, Ky.-based company said the mine's relatively close proximity to both the Green and Ohio rivers — within about 20 miles — should allow for barge transportation to most destinations.

Carbonado already has secured a three-year, 480,000-tons-per-year coal sales agreement with Louisville Gas & Electric Co., a subsidiary of PPL Corp. of Pennsylvania, for the mine. LG&E and Kentucky Utilities Co., also owned by PPL, are Kentucky's two largest electric utilities with nearly a million customers combined.

Carbonado controls an estimated 30 million tons of reserves in the area. Peabody Energy had leased the reserves until 2007.

Bradford said the mine's presence near the two rivers also may give Carbonado opportunities to export some of the mine's coal as well.



DATELINE WASHINGTON

IS THAT AN ICEBERG AHEAD?

BY LUKE POPOVICH



We Americans, you can't keep us down. Our voices and our clothes may be too loud for refined tastes. But thanks to our super-charged energy production, we are now the envy of the global economy just six years after we nearly wrecked it.

But let's not get ahead of ourselves. Despite appearances, this bounty is not welcomed by all.

While it's certainly good news to American manufacturers and their employees, to the record number of jobless across the country, to frustrated Americans who've dropped out of the labor force, to cities and states hungry for revenue and to consumers happy to buy "made in America," it is not good news for environmental regulators in the administration. That's because this spectacular good fortune is the result of fossil fuel, and the Environmental Protection Agency (EPA), as well as their activist allies, don't like fossil fuels. They question the value of high-wage jobs, competitive industries, fiscal solvency and the other blessings that are purchased with it.

In fact, the same week the president highlighted the plight of a shrinking middle class and falling wages, and pleaded with Congress to increase the minimum wage and extend unemployment benefits, his biggest regulatory agency effectively banned future coal-fueled generation with a new greenhouse gas regulation. Soon EPA will go after existing coal plants. So an industry saddled with punitive regulations that has already lost 30,000 good jobs and about 37 gigawatts of capacity within the past two years is about to get more of them.

If you don't live in Washington, you might think to yourself: good grief. Hasn't the president repeatedly called attention to the growing "wealth gap" and the need to create good jobs to close it? Hasn't he just announced enterprise zones in places like southeastern Kentucky where his administration will target policies designed to lift lagging employment from a declining coal industry? Are EPA officials asleep or playing Angry Birds in all those cabinet meetings and congressional hearings when job creation is proclaimed to be Washington's No. 1 bipartisan goal?

This is what happens when an environmental agency makes

energy policy. You wouldn't take your car for repair at a hair salon, but here in Washington we turn over the nation's baseload power supply to bureaucrats who oppose the energy source that generates the largest portion of it. Sure, these are clever people; some were even class presidents. But they're the same people who didn't see the shale gas boom heard round the world. Now they feel confident enough to insist we don't need new coal-based capacity, that natural gas can handle electricity generation, and at prices we all can afford. Maybe. But the question is, why take the chance?

Already, the price of gas has more than doubled from its 2012 low. And with new markets here and abroad, natural gas prices could easily rise much closer to the world price — especially if supply peaks and regulators succeed in keeping gas in the ground as they have coal. Meanwhile, nuclear power, that other pillar of baseload power, is in a rut, struggling to stay price competitive. Its share of the power market is expected to decline in the next two decades. Coal and nuclear between them generate 71% of our electricity. With both on the wane, that could leave electricity vulnerable to price volatility, supply interruptions and the inevitable but unforeseen events that should make policymakers humble.

Seeing our baseload power system steaming straight into an iceberg, some in Congress want to change course. Sen. Joe Manchin (D-W.Va.) and Rep. Ed Whitfield (R-Ky.) are sounding the alarm, rallying bipartisan support in both Houses to require any greenhouse gas emissions standard for new power plants to be based on proven, commercially available technology. The agency's current proposal, based on carbon capture technology, fails this obvious test for reasonable standard setting. "EPA is gambling on unproven technology and risking far higher electricity costs," said National Mining Association CEO Hal Quinn last month. The Manchin-Whitfield bill would minimize this risk by reserving an important role for Congress when EPA moves to regulate emissions from the existing coal fleet.

Will enough Senate Democrats see the risky course EPA has set for baseload power? Stay tuned. But in the meantime, secure the lifeboats.

Luke Popovich is a spokesperson for the National Mining Association, the industry's trade group based in Washington, D.C.

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COAL GENERATION DIPPED NEARLY 12% IN 2012 AS GAS, WIND, SOLAR GAINED

BY RIZWAN QURESHI, ENERGY ANALYST, SNL

The fuel mix for power generation in the United States continues to evolve away from coal, which has historically been the largest source for electricity production. While natural gas has been eating into coal's market share, net generation from wind and solar also has increased, according to an SNL Energy analysis of the most recently available U.S. Energy Information Administration and FERC annual data on fuel burn and net generation.

Generation from solar plants more than doubled year-over-year in 2012 to about 4.2 million MWh, with 175 projects completed, according to SNL Energy data. Wind generation increased by more than 16% to about 139.6 million MWh in 2012.

Net generation from natural gas saw a 20% year-over-year increase in 2012, accounting for more than 29% of the total generation, compared to 24% in 2011. Due to natural gas prices seeing historic lows in 2012, as well as new environmental regulations targeting coal-burning plants, utilities opted to increase the use of cheaper natural gas-fired power plants, with a large number of power plants switching their primary fuel source to natural gas. In 2011 and 2012, more than 5.5 GW of power plant capacity switched to burning primarily natural gas from another form of fossil fuel.

Coal recorded the largest absolute decrease in net generation among all fuel types, falling by more than 209.6 million MWh between 2011 and 2012, an 11.97% decline. The market share of coal-fired generation as a percentage of total net generation in the U.S. also declined, falling to almost 38% from more than 42% in 2011.

Examining a broader time frame, an SNL Energy analysis of fuel-burn data using annual EIA 923 filings from 2008 to 2012 shows that coal burned by power plants in the U.S. declined by more than 22% during that five-year period, while natural gas burned by power plants increased by almost 36%.

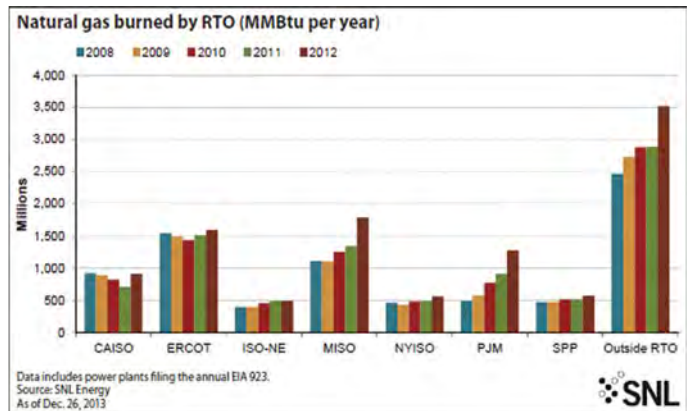
Power plants in the PJM Interconnection LLC region saw the largest percentage increase among operating regions in the quantity of natural gas burned between 2008 and 2012, with an increase of just more than 162%. The historically low level of natural gas prices in 2012 was a catalyst for increased competition between gas and coal in the PJM dispatch curve, as natural gas-fired power generation became increasingly economical.

PJM continues to be the region most affected by coal retirements, with 12,370 MW of coal capacity slated to be closed between 2013 and 2022. Midcontinent Independent System Operator Inc. saw the second-highest percentage gain in the volume of gas burned by its power plants between 2008 and 2012, with an increase of almost 60%. Coal plant retirements in the region have forced a shift toward gas-fired generation, and MISO saw its net generation from natural gas plants increase by just under 27% year-over-year in 2012.

While PJM and MISO recorded the largest percentage increases in gas burned over the five-year period, ISO New England Inc.

Fuel type	2012 Net generation (MWh)	2011 Net generation (MWh)	Change from prior year (%)
Solar	4,186,546	2,017,045	107.56
Gas	1,197,883,288	996,983,140	20.15
Wind	139,645,778	119,892,195	16.48
Oil	27,155,122	25,061,414	8.35
Geothermal	15,514,601	15,316,060	1.3
Biomass	63,662,613	62,992,846	1.06
Nuclear	769,331,249	790,204,367	-2.64
Other non-renewable	17,214,256	17,957,106	-4.14
Coal	1,542,199,173	1,751,858,961	-11.97
Hydro	295,916,995	341,850,603	-13.44
Total	4,072,709,621	4,124,133,737	-1.25

Plants with an inservice year of 2012 and those with reported net generation in both 2012 and 2011 are included. Source: SNL Energy



saw the largest percentage decline in the annual quantity of coal burned, at about 79%.

As coal consumption for power generation declined in ISO-NE, reliance on natural gas has increased, with the region burning more than 495 million MMBtu of natural gas in 2012, compared to roughly 407 million MMBtu in 2008. Natural gas is the region's dominant fuel, producing more than 50% of regional electricity in 2012, according to SNL Energy data.

New York ISO had the second-largest decrease in the volume of coal burned by its power plants between 2008 and 2012, with a decline of almost 73%. Coal retirements in NYISO due to environmental regulations have played a major part in the decline of coal burn in the region.

Power plants not located within any specific RTO region also saw a large decline in the amount of coal burned over the five-year period, seeing a decrease of nearly 28%, while also recording a 43% increase in gas burned between 2008 and 2012.

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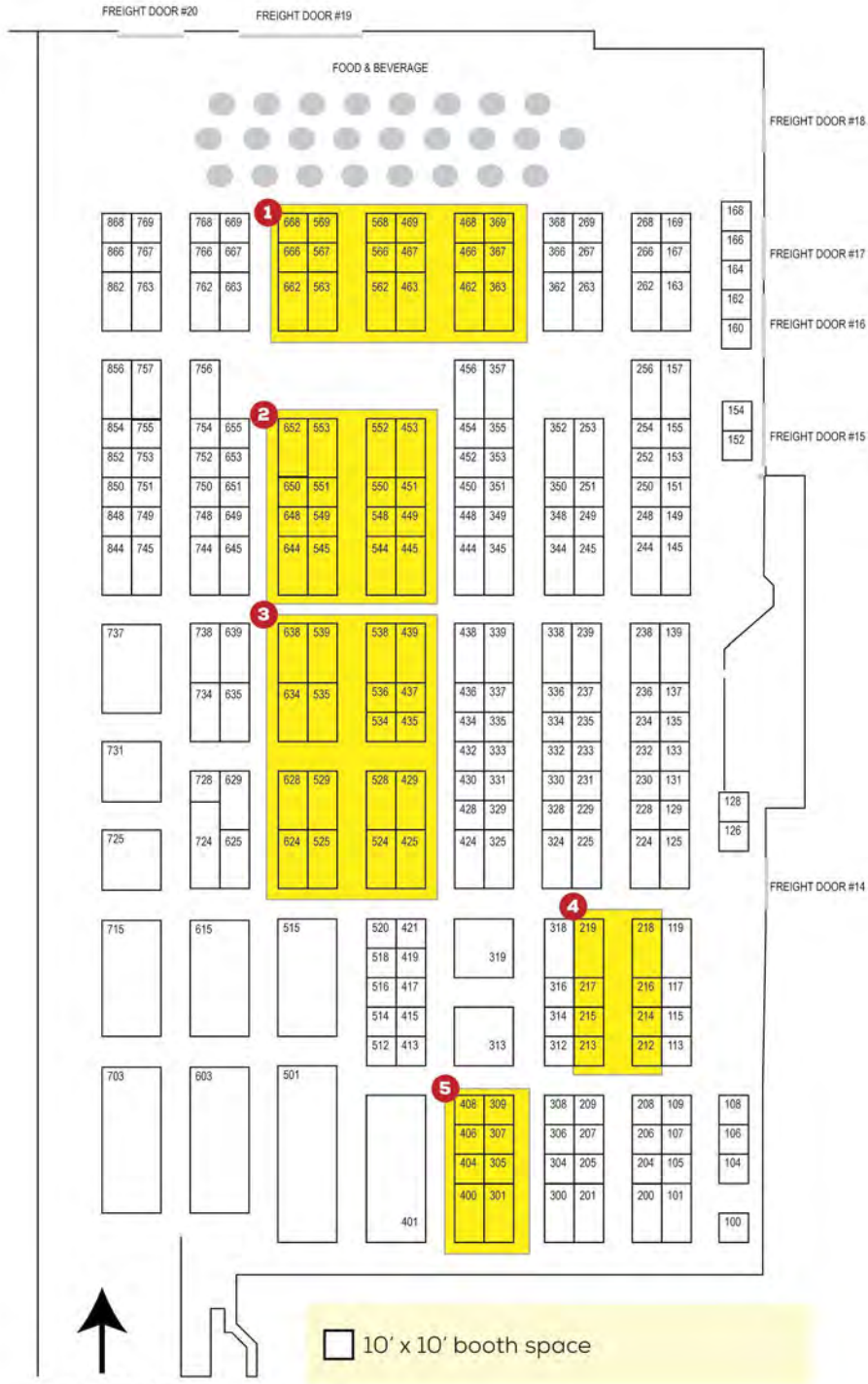
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MET COAL DEMAND INCREASES FOR INDIA; BE ALERT TO SHIPPING RISKS

BY DAVE GAMBREL

According to Steel Insights, coking coal imports are expected to jump as steelmakers shift to low-grade iron ore. India's coking coal imports could see a double-digit percentage increase this fiscal year as a scarcity of high-quality iron ore after a mining ban is forcing steelmakers to use inferior grades that need more coal to process into steel. The world's third-largest importer of coking coal imported 32.2 million metric tons (mt) the last fiscal year (April 1–March 31). The use of low-grade iron ore would mean more coal purchases from traditional suppliers such as Australia, South Africa and the U.S. helping support prices even if demand from China tapers.

Would-be charterers of vessels calling on India often find ship owners are reluctant to call on West Indian ports, or at least an unwillingness to do so without receiving a freight premium. Shipbrokers may not say why, leaving charterers to believe it has something to do with monsoon season or some other intangible reason. While weather certainly affects shipping route choices, it is more likely in this case that piracy plays a dominant role in the decision. As Figure 1 shows, the so-called "East Africa Hotspot" covers a vast area of the Indian Ocean, including all of western India and a huge area of East Africa. The biggest piracy "hotspot" in Southeast Asia is the Malacca Strait, but our focus for now is on West India.

U.S. coal producers need new coal markets now, but as is often the case, "if it seems too good to be true, it frequently is." East Coast and Gulf Coast exporters seem to have little choice but to ship via the Suez Canal, unless they wish to pay a premium for shipping another 2,590 nautical miles around the Cape of Good Hope in South Africa. While the primary destination for met coal would be the east coast of India, the only way to get there at minimum piracy risk would be to ship around the Cape of Good Hope. There is, of course, the choice preferred by many shippers: let the buyer charter the ship and take all the shipping risks. However, in case the coal buyer wants to bring up the extra cost of shipping the safer route, the coal seller should be prepared. The extra nine days of travel time would cost about \$90,000-\$100,000 at today's daily rates for Panamax or Capesize vessels, but this would partially be offset by Suez tolls and higher insurance premiums.

While coal vessels have not often been the target of choice, pirates have not avoided them altogether. Somali pirates operating 700 miles east of the Horn of Africa seized a Chinese Panamax coal vessel (De Xin Hai) in 2009. To achieve release of the vessel, its crew of 25 and 76,000 mt of South African coal, it was necessary for a helicopter to drop \$4 million in ransom from a helicopter to the deck of the vessel. Sea gangs of Somalian pirates have made tens of millions of dollars operating in that area.

Some of the lower-quality iron ores mined in India have a higher than normal alumina content, which leads to higher

slagging (residue from smelting of ore) in the blast furnace. As a result, when using increased amounts of the lower-grade iron ore, blast furnaces require higher levels of heat.

Domestic steel companies have traditionally preferred high-grade ores as every percentage point increase in iron content improves productivity by 2% and reduces coking coal consumption by 1%. High-grade ore contains more than 64% iron.

Mining bans in key producing states have forced Indian steel companies to adopt methods to be able to use even low-quality ores, containing as low as 48% iron accumulated over the years. Many of the so-called beneficiation plants, which extract waste material from ore and increase iron concentration, are struggling with high percentages of waste materials. Low-grade ores contain very high alumina and silica, which cannot be taken out during the beneficiation process. This results in higher fuel consumption.

Coking coal consumption could rise about 15 % this fiscal year mainly due to the use of low-grade iron ores. JSW Steel imports all of its coal needs (about 14 million mt last fiscal year) due to a shortage at home. Kalyani Steels' imports of coke, derived by heating coking coal, would rise 50% to 150,000 mt this fiscal year as it uses low-grade iron ore.

In the current fiscal year, Paradip Port Trust (PPT) projects exports of 5.5 million mt of iron ore, including about 1.5 million mt of iron ore pellets. This is 300% more than the 1.8 million mt iron ore exports recorded by the port last year. The higher target is based on improved global demand for this steel making raw material. For 2013-2014, PPT has set a target of 4 million mt of iron ore exports along with 1.5 million mt in iron ore pellets. Pellet exports are just emerging and will continue to grow.

In 2012-2013, poor Chinese demand coupled with problems in availability of iron ore within the state due to restrictions imposed by the government, had pegged back the exports to a historical low of just 1.83 million mt, against 12 million-3 million mt reported annually in 2008-2009 and 2009-2010.

The unavailability of iron ore was so acute last year that local steelmakers, such as Bhushan Steel and Power Ltd., had to import iron pellets from Brazil to run its mill in Sambalpur district. Though Odisha produced 62 million mt of iron ore in the last fiscal year, it was not easily available to steel mills, as the state government had imposed restrictions on road transportation of minerals. However, major miners attributed the lull in exports in 2012-2013 to higher pricing and stiff export duty slapped by the Union government. In February 2013, the rates rose to \$158/mt for 62% grade ore in global markets, forcing Chinese buyers to scale down imports from India amid a rise in export duty from 20% to 30%. In 2012-2013, India's contribution to Chinese iron ore supply dropped from 6% to below 2%

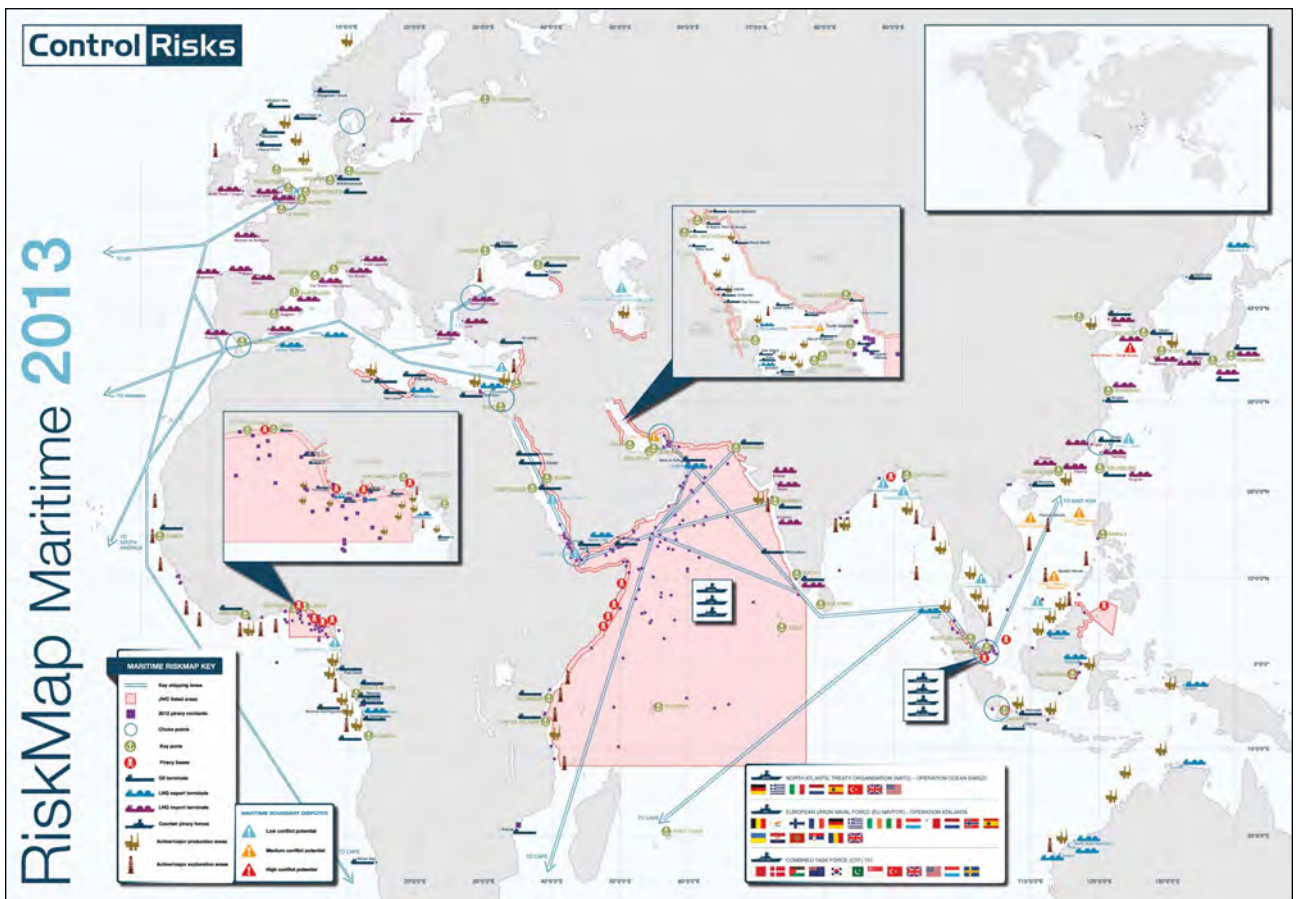


Figure 1: Maritime Risk Map, 2013 (Source: Control Risks)

due to higher prices. The rates are currently hovering around \$120/mt-\$122/mt at Indian ports.

Besides iron ore fines, pellet exports are picking up from Odisha, which has large capacities of pellet production. Though the amount of conversion of fines into pellet is lower in Odisha in comparison with generation of fines, recently it has gone up as some firms have shown interest in producing pellet. At present, Jindal Steel and Power Ltd., Brahmani River and Pellet Ltd., Essar Steel, Bhushan Steel and Power Ltd., and Adhunik Metaliks are engaged in production of pellets with a combined annual production capacity of 20 million mt. Pellets are produced from dusty iron ore fines and are used as raw material for steel production. They can be used in place of sized iron ore in blast furnaces and are priced higher than fines.

Ignorance is No Protection from the Application of General Average

While general average is a term with which many transportation professionals are familiar, it is a subject worth reviewing in light of new exposures that may fall within it. If one expects to play an important part in exporting coal, do not plan on the “protection of ignorance.” One should act as if their job depends on their knowledge of it, because in a very rare instance, it might.

Vessels on the high seas are subject to the general average concept, which dates back to the ancient mariners. Under these terms, not only are ocean carriers not liable for loss or

damage to cargo, but the cargo owner is actually responsible, in part, for the cargo of others, as well as the ship itself. This could be a sobering concept, especially for the guy who took no part in negotiating the charter.

General average arises when a sacrifice or expenditure is intentionally made or incurred in time of peril by one of the parties to the adventure, not for his own benefit, but for the benefit of all concerned in the enterprise, including the ship, cargo and freight. The classic example of a general average sacrifice is jettison to lighten a stranded vessel. Jettison is the throwing overboard of cargo of ship’s material, equipment or stores. Most general averages are caused by stranding, fires, collisions, or when a vessel is engaging in salvage assistance, or putting into a port of refuge due to an accident during the voyage.

When general average is declared, the owners of the vessel and cargo are required to absorb a proportionate share of the loss to compensate the owner of the vessel and/or cargo that was singled out for the sacrifice. All participants in the maritime adventure contribute to offset the losses incurred, at an amount set forth by the average adjusters. The object of a general average adjustment is to place the parties to the adventure in the same positions, regardless of which of them initially sustained the loss or incurred the expenditure.

The basis for general average adjustment is customarily established in the contract of affreightment, which usually

states that adjustment will be made according to the rules of a certain port, or if that port or country lacks jurisdiction, according to the York-Antwerp Rules. The potential financial loss from general average exemplifies the importance of cargo insurance, even for shippers of low-value merchandise. Without All Risk or Free of Particular Average (FPA) cargo insurance, cargo owners would be forced to post a cash deposit with the vessel owner to have the cargo released. This deposit would likely be tied up for two or more years until the general average adjustment was completed.

Every shipper should have cargo insurance, even if they think their cargo does not have a value worth covering. The liability for general average makes purchasing cargo insurance an essential business decision. The American Institute for Marine Underwriters reports a decline in total loss figures in 2009, compared with 2008, and that is probably attributable to the continued slack of volume overall. According to the International Union of Marine Insurers (IUMI), the number of losses is likely to rise as the year progresses.

One issue that continues to escalate is piracy, and in particular, piracy off the Somali coast. The International Maritime Bureau reported that piracy attacks increased from 114 in just the first six months of 2008 to 240 during the first six months in 2009. While most cargo insurance policies will cover loss or damage to cargo stemming from piracy, there is concern as to whether ransom payments made to pirates are illegal, and, moreover whether the vessel and cargo insurers contribute to an "illegal" activity.

Worldwide, anti-terrorism laws prohibit payments to groups tied to terrorism, and while there is no link between piracy and terrorism now, this continues to be an open question.

On April 13, 2010, President Barack Obama issued an executive order preventing U.S. citizens and entities from making payments to certain named individuals, and there is also the potential to prevent any payments to individuals or groups involved in or supporting piracy in Somalia. This executive order has spurred several questions and the Lloyd's of London Joint Underwriting Committee is seeking clarification. While it is generally agreed that piracy ransoms fall within the scope of general average, the debate over ransom legality will ultimately be the deciding factor in how insurers will respond. So while general average may seem like an antiquated piece of maritime law, it is a dynamic vehicle that allows for a fair and equitable division of costs attributable to saving a voyage.

One should learn all they can about general average so they have a feel for the risks they may face, however rare the occasion may be. Every exporter should have a general average conversation with a maritime attorney annually. It is no different in concept than the attorney's admonition about conflict of interest at the outset of every meeting: it may seem like wasted words, but it also may save one or more people.

Dave Gambrel is a transportation consultant and writer. He has chartered more than 50 coal vessels of Panamax or Capesize capacity. He was a member of the Commercial Panel of the American Arbitration Association from 1980-1998. He may be reached at bunkgambrel@earthlink.net.



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COAL MARKETS WILL REBOUND IN 2014

Supply and demand fundamentals work for the industry after huge rationalization in 2013

BY STEVE FISCOR, EDITOR-IN-CHIEF

The best picture for U.S. coal markets for 2014 would be sustaining the momentum the industry experienced during the second half of 2013. Last year turned out better than expected. Total production numbers are down, but they are not down as far as they could have been. Utility consumption of coal grew at a healthy clip starting in the second half of 2013. Spot prices for some coals have also increased. With natural gas prices sitting at a healthy level, the stage has been set for a modest rebound in 2014.

Even though equities on the New York Stock Exchange have reached historic highs, the U.S. economy — as far as job creation for the manufacturing, industrial and construction sectors — has still not improved substantially. Neither has the

demand for electricity. Coal as a baseload fuel for power generators won back market share by being competitive with natural gas for the moment and the natural gas futures signal that this trend will likely continue.

From a regulatory standpoint, nothing has changed. President Obama's "War on Coal" rages. There is talk among coal-state politicians, but talk is cheap. The Environmental Protection Agency (EPA) has steam rolled future coal-fired power generation and is now setting its sights on existing installations.

Every January, *Coal Age* publishes its Annual Forecast based on a survey of its readership. The informal study gives an assessment of the current market situation, as well as the state of mind among coal

operators. Using that information, and data from the leading coal companies, the Energy Information Administration (EIA) and the Edison Electric Institute, *Coal Age* tries to make an informed decision about future market trends.

Last year's Annual Forecast predicted a decrease by 4% for 2013 or 41 million tons from 1,016 million tons to 975 million tons. Total U.S. coal production fell by 2% in 2013, or 21 million tons, to 996 million tons. While this is not great news, it beat the forecast and observers should not lose sight of the fact that the U.S. still mined nearly 1 billion tons of coal last year.

In addition to supply and demand fundamentals, the survey asked coal operators about their feelings, the amount of money they plan to spend this year, and how they intend to spend it. Coal operators are

Figure 1—Production, Consumption & Attitude

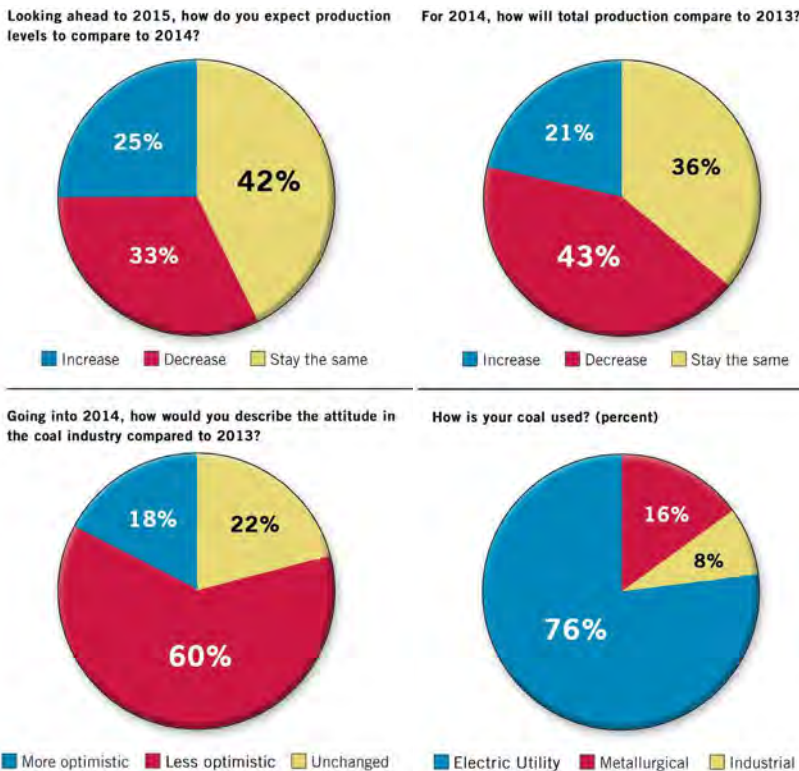
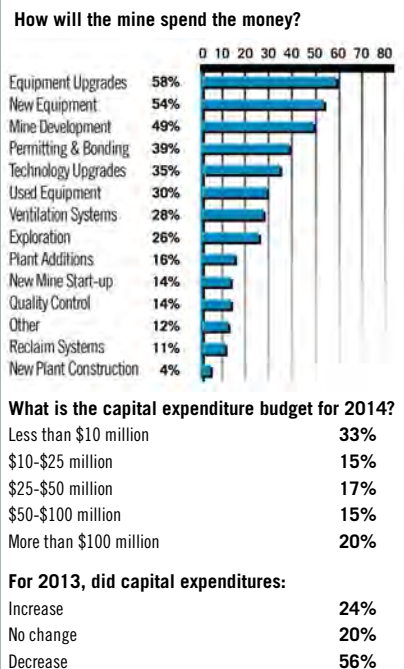


Figure 2—Capital Expenditures



unhappy, but they are less pessimistic than they were last year. More of them have more money to spend on capital projects this year.

The survey also asked them to rank issues affecting the industry. A similar open-ended question, designed to identify possible overlooked issues, elicited an overwhelmingly similar set of responses that singled out the Obama administration, the EPA and other federal agencies as trying to drive the coal industry out of business. They are taking it personal and the mood can be best summed up as somewhere between anger and shocked disbelief with the lack of a sound energy policy from Washington.

Investments Are Being Made to Reduce Operating Costs

Coal Age contacted 500 coal executives and received 58 completed surveys. The demographics largely resemble the U.S. coal industry. The majority of them (72%) produced bituminous coal. Subbituminous, lignite and anthracite accounted for 20%, 6% and 2%, respectively. As far as production capacity, most of the respondents represented large mine operators (more than 5 million tons, 50%), followed by medium (1-5 million tons, 32%) and small (less than 1 million tons, 18%); 42% described themselves as underground coal operators exclusively, while 16% said they only operated surface mines. The remainder (42%) said they worked for a company that mined coal using both surface and underground techniques. Similar to years past, most of the respondents said their coal went to electric utilities (76%). The remainder said their coal was destined for steel mills (16%) or industrial boilers (8%). Steam coal is the overwhelming use for the majority of U.S. coal production.

Going into 2014, coal operators are less pessimistic than they were last year. A total of 60% described their attitude as negative, while 18% were more optimistic. Last year, a whopping 73% of the respondents said they viewed 2013 with pessimism. Only 10% of the respondents were optimistic.

Of the executives surveyed, 43% thought coal production would decrease in 2014, while 21% felt production would increase and 36% said production would remain the same. In 2013, 48% felt a decrease in 2013, while those seeing it stay the same or increase were evenly divided. Basically both groups that saw a change in the market, whether it was an increase or a decrease, decreased 5%. Those seeing it

Figure 3—Current Spot Prices for Coal (\$/ton)

	Btu/lb	lb SO ₂	Dec 09	Dec 10	Dec 11	Dec 12	Dec 13
Northern Appalachia	13,000	3.0	\$52.50	\$70.00	\$73.30	\$63.00	\$68.00
Central Appalachia	12,500	1.2	\$57.40	\$72.75	\$76.30	\$68.15	\$63.58
Illinois Basin	11,800	5.0	\$40.50	\$47.50	\$50.00	\$47.90	\$46.15
Powder River Basin	8,800	0.8	\$9.25	\$13.60	\$12.50	\$10.45	\$11.50
Western Bituminous	11,700	0.8	\$40.00	\$41.00	\$41.00	\$35.75	\$35.95

Source: EIA/Platts Coal Outlook Weekly Price Survey

Figure 4—Productive Capacity: At what percent of your total capacity do you expect your company will operate in 2013?

	2009	2010	2011	2012	2013	2014
Less than 90%	58%	68%	50%	61%	79%	60%
90% to 100%	42%	32%	50%	39%	21%	40%

stay the same grew 10%. Looking ahead to 2015, 52% of the respondents see the market staying the same while 33% see it decreasing and 25% see it increasing.

A question regarding productive capacity also showed a moderating attitude (See Figure 4). A total of 60% of the respondents thought their mines would run at less than 90%, which is down from 79% last year — a 10-year high. Several conclusions can be drawn: the industry worked through a period of over capacity, the market improved or all of the above.

Coal mining is a capital intensive business. For 2014, 24% reported an increase in capital budgets, compared to 17% last year. The respondents seeing a decrease stayed the same: 56%. So capital budgets improved toward the increase and the

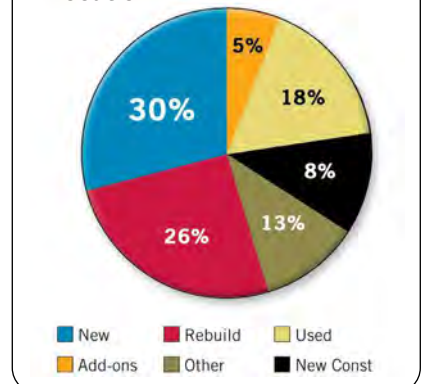
amount of people seeing their budgets staying the same decreased. When asked how they would spend the money, they said equipment upgrades (58%), new equipment (54%), mine development (49%), permitting (39%) and used equipment (30%). Equipment upgrades have taken a priority over new equipment for three consecutive years now. When asked how their money would be allocated on a percentage basis, the majority of the respondents said 30% of their money would be spent on new equipment and 26% would be spent on equipment rebuilds (See Figure 6).

When asked about their capital budgets, 33% of the respondents reported they would spend less than \$10 million this year. A total of 20% said they would spend more than \$100 million; 15%, \$10-\$25 million;

Figure 5—On a scale of 1 (not very important) to 5 (extremely important), how do the following concerns rate?

1. Politics and policy (4.7)
2. Power plant regulation (4.5)
3. Prices (4.4)
4. Economy (4.2)
5. Bonding & permits (3.7)
6. Retiring workforce (2.8)
7. Limited capacity (2.6)
8. Other (2.6)

Figure 6—Average Expenditure Allocation



17%, \$25-\$50 million; and 15%, \$50-\$100 million. Those that are going to spend are going to spend more. This year 52% will spend \$25 million or more. Last year that figure was 32%.

Coal operators expressed a lot of frustration in the survey. When asked: What will affect the U.S. coal industry the most and how should it prepare? Many of the responses cited the EPA's "War on Coal" and referred to the Obama Administration. A significant group said low natural gas prices. Many had constructive ideas on how to prepare. A sampling of several of the responses, which were fit for publication, are offered anonymously on page 27.

When asked about what specific issues

will affect the coal industry the most in 2014, politics and policy displaced power plant regulation as the leading concern. Coal prices overruled the economy. Reading between the lines, the miners are saying that prices and the economy do not matter if their customers are not allowed to burn coal. Limited production capacity was the least of their concerns.

Domestic Market Improves, While Exports Soften

Total U.S. production for 2013 totaled 995.8 million tons, 2% lower than 2012, which was 1,016 million tons. This is the first time total coal production has dropped below the 1-billion-ton mark in 20 years.

A 21 million drop in production sounds significant, but it pales in comparison to the 73-million-ton decline between 2011 and 2012. The bleeding has not stopped, but it's safe to say the industry has stabilized from a freefall situation. Central Appalachian (CAPP) coal production declined by 10 million tons, or 7%, year-on-year in response to weak demand. Coal production from the Powder River Basin (PRB) declined by 8 million tons, or 2%, year-on-year as operators reduced production because of weak prices. The Illinois Basin (ILB), Northern Appalachian (NAPP) and Western Bituminous coal production all increased, with ILB growing the most (6 million tons, or 5%).

The good news amidst all of these figures is that the utility coal burn is increasing. Utility coal consumption accounts for about 85% to 90% of U.S. coal production. At the end of the third quarter 2013, utilities had burned 649 million tons, compared to 614 million tons in 2012 and 723 million tons in 2011. That's an increase of 5.7% or 35 million tons. While no one's sure of the new norm, total 2013 consumption could be somewhere in the range of 870 million tons, compared to 824 million tons in 2012 (the lowest amount since 1992) and 932 million tons in 2011.

The gains that coal made in 2013 were at the expense of natural gas. Prices for natural gas increased during 2013, creating a shift back to coal in some regions. For the year, the prices utilities paid for natural gas remained above \$4 per 1,000 cubic feet (Mcf). In May 2013, they climbed as high as \$4.79/Mcf before dropping to \$4/Mcf in August. As of October, they stood at \$4.26/Mcf.

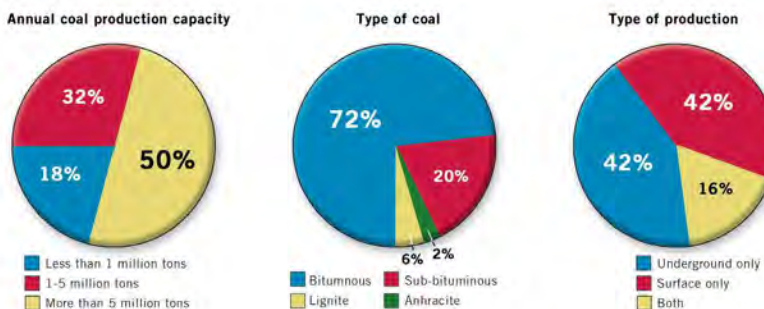
The American economy is powered by electricity and electrical demand will only increase significantly when America experiences a true economic recovery and the manufacturing sector begins to grow again. In the meantime, utilities have excess capacity and they can play the spot market to hold costs down for their customers, pitting coal against natural gas. In some areas the transition to gas from coal has been more pronounced.

The region with the largest shift between coal and natural gas in terms of both the overall generation levels and the relative fuel mix has been in the Southeast, according to the EIA. Competitive natural gas prices, a concentration of highly efficient natural gas-fired generators, and the high cost of shipping coal from the mines

Figure 7—What will be the single most expensive item the mine purchases in 2012? What will it cost, in round figures?

Longwall (5)	\$6.8-\$95 million
New portal (2)	\$45-\$65 million
Dragline	\$45 million
New shafts (3)	\$4-\$42 million
New mine development (2)	\$25-\$36 million
Prep plant	\$25 million
Longwall shield overhaul	\$20 million
Longwall shields (2)	\$20 million
Dragline rebuild	\$16 million
New portal (existing mine)	\$9 million
Continuous haulage system	\$5.5 million
Equipment (5)	\$450,000-\$5 million
Equipment upgrades	\$3 million
Equipment rebuilds	\$2 million
Continuous miner rebuild (2)	\$1.4-\$1.5 million
Continuous miners	800,000
Prep plant upgrades	\$500,000
Coal loaders	\$400,000
Long-reach backhoe	\$25-\$50,000
Tracking system	\$40,000

Figure 8—Survey Demographics



have all contributed to this shift. Coal-fired generation rebounded modestly in 2013 as natural gas prices rose above their 2012 levels, but coal is still contributing less than 50% of regional generation this year, which is a dramatic shift from 2001-2009.

At the end of September (latest stats available), coal stockpiles at utilities stood at 152 million tons, the lowest level in two years. For the last year, coal inventories had remained steady between 170 and 185 million tons. During the summer of 2013, utilities drew the level down roughly 18 million tons from 170 million tons at the end of the second quarter.

For the most part, prices for prompt delivery of coal (spot prices) have reacted as one would expect. CAPP spot coal prices trended downward on weak demand. NAPP and PRB spot coal prices trended

upward, while ILB and Western Bituminous spot coal prices remained largely unchanged. For December 2013, spot prices for NAPP coal had improved \$5/ton to \$68/ton over the same period as last year. CAPP prices were down \$4.57/ton to \$63.58/ton; ILB \$46.15/ton vs. \$47.90/ton last year. Prompt prices for PRB had increased considerably to \$11.50/ton from \$10.45/ton. Western bituminous essentially remained the same \$35.95/ton vs. \$35.75/ton last year.

U.S. coal exports have slowed, but remain sizable, totaling 90 million tons year-to-date through September, compared to 98 million tons at the same time last year. Exports should eclipse 110 million tons for full year 2013. Markets for metallurgical or coking coals remain weak and exports are not expected to grow in 2014.

With a significant amount of excess capacity and lower stockpiles at utilities, PRB production has the potential to surge more than 10% (40 million tons) given a positive pricing climate and potential rebound in coal generation. The ILB will likely sustain its momentum of 5% growth or more 2014 (7 million tons). Similarly, Appalachia will see more of the same. NAPP will remain flat, while more CAP producers move more coal into export markets and abandon power generation. CAPP could see a decline of more than 5% (20 million tons).

Based on this information, *Coal Age* believes total U.S. coal production will grow by an additional 2.7% in 2014, which would add 27 million tons, taking total production to 1,022 million tons.

COAL AGE READERS SPEAK OUT

Continued aggressive moves by the U.S. EPA, intent upon destroying the mining and use of coal, remains our biggest challenge. Producers need to focus on cost control, maximizing the value of their coal for customers, helping the public to understand what a future without coal-fired generation looks like and fighting a delaying action in Washington in hopes that a 2017 administration will have fewer "true believers" in energy socialism.

The U.S. coal industry will be affected (either positively or negatively) by the decisions of the current government administration. If the feds continue to sit on their hands (and do virtually nothing related to the energy sector), obviously, the industry cannot make informed decisions about future capital investments and technological development. Hopefully, with the next administration change, we will have leaders in office with the backbones to make decisions based upon feedback from the real experts that truly understand the aspects of the energy industry's production and infrastructure.

I believe that the U.S. coal industry should concentrate mostly on their exportation of product until such time that the domestic needs cycle back (which is inevitable). With the direction we are currently headed, there will be massive blackout/brownouts before the general public will demand that something different be done.

I see no way to overcome the lunacy we see in Washington as it now stands.

The EPA will affect the U.S. coal industry the most in the near future. The U.S. coal industry needs to prepare by trying to survive the Obama Administration's remaining term. The coal industry needs to start talking to the prospective presidential candidates now so we can get a feel for who we need to vote for in 2016. All companies that depend on the coal industry need to work lean and mean for the next two to three years.

Politics, Policy And Regulation: We as an industry need to be better sales people to the public, letting them know of the value of coal in our

economy (low cost electricity, jobs, supporting jobs and etc.) and that it can be transported and burned cleanly. We need to also remind them that, just as we have seen in the past, natural gas price will spike as demand rises. If we burn both coal and natural gas we can ensure our energy independence for any foreseeable future. If we can do this, Politics, Policy and Regulation will fall in line. Also, as far as export coal goes, if we do not provide it, some other country will.

More than anything, the low cost of natural gas has hurt the coal industry. Environmental regulations have just begun to have an impact but between both there is much uncertainty. The current trend appears to be to operate at the lowest cost per ton making the coal industry very competitive in the equipment and supply sector. Coal operators have to be extremely diligent with the investments they make and how they run their operations. They have to operate as safely as possible to avoid MSHA fines. Coal will be around for the foreseeable future because the only real competition is natural gas. Gas production has always been difficult to accurately predict and has been problematic in the past. If you look at history there have been up and down cycles with gas production and it seems just when everyone starts to rely on a stable supply/price the unpredictable nature of gas causes huge price fluctuations. Look for increased environmental regulations to play a role in gas production as well.

The U.S. coal producers should match dollar for dollar the Sierra Club's "War on Coal" campaign and defend itself both here in the US and in export counties. Also the coal producers should put up a real united front and seriously fund clean coal technology and pursue a Government funding shift from solar and wind research to cleaning the CO₂ out of the most abundant fuel in the US.

I believe what is the most threatening aspect of the future is the lack of education of the general public about how important coal is to their lives every day, while allowing the well-funded but extremely misleading information from the so-called greens to form public opinion.

SIMULATOR TRAINING, REAL PRODUCTIVITY

Master Driller Program comes to the U.S. after proven success in other countries

While the mining industry grapples with uncertain market demands, it also faces one of its biggest future challenges — a shortage of skilled operators. Those shortages are due to new positions being added to mines and a loss of workforce from retirements. Either way, it takes time to get new operators well trained.

Atlas Copco believes its Master Driller Program can help. It gets operators to perform their best whether a mine is working with new staff, changing its fleet or just trying to increase efficiency. It involves classroom time as well as simulated drilling in a simulator cab of an actual drill rig.

“We are starting the program for the Pit Viper and will expand the Master Driller Program across other product lines in the near future,” said Wesley Stivers, regional training manager of North and South America for Atlas Copco Mining and Rock Excavation Service Division (MRS).

For now, training will first be offered through the Garland, Texas, Atlas Copco MRS hub. Stivers and Versie Wallace, U.S. training managers for MRS, are already working on plans to set up training in other Atlas Copco locations across the U.S. and may expand the program to private distributors later.

“It’s very exciting training that will ensure that our operators are skilled on the specific machines they operate,” Wallace said.

Graduates Agree

The Master Driller Program recently made a big difference to one company going through a mine expansion. Before the mine even received shipments of their new Atlas Copco Pit Viper 271 blasthole drill rigs, operators began to learn on them.

After the training, the crew will be able to drill on the first day the PV-271 arrives. Despite many years of experience, the superintendent and drillers completed the training that they thought would make them communicate better, would help job-



Instructor Brett Randall leads a Master Driller class.



The visuals for simulators continue to improve.

site collaboration, and would improve overall efficiency.

The trainees were a mix of ages, talents and backgrounds. One was an experienced 58-year-old operator who has been drilling for 28 years and purchased his first computer only three weeks earlier. One was 47 and had drilled for years with some computer experience. A third was 28 with eight years of drilling experience and many years of computer gaming.

During the three-day course, the group studied drill startup and stop, safety proce-

dures, towering-up, propelling, advanced propelling, drilling and advanced drilling.

As one master driller student simulated the drilling of five holes, his skill level increased, completing the last two holes in half the time it took to do the first one. This section had an overall time limit of one hour. On the first attempt, he failed it by two minutes. Repeating the level, he finished it in just 32 minutes. By the second run, each operator had cut his time in half and had become proficient with the controls.

Another driller said that without the simulator training, he would have figured out how to operate the rig, but the course got him up to speed so that he will be ready to drill when the new rig arrives on site. He added, “The simulator is definitely safer. You can’t damage the simulator like you can the drill itself.”

Almost all Atlas Copco blasthole rigs, along with underground and surface crawler drill rigs, have training programs designed to help operators become master drillers. Training on equipment other than the Pit Viper will be available soon in the U.S.

This article appeared in Atlas Copco’s customer magazine, Mining & Construction USA. Wesley Stivers can be reached at: 972-496-7400 (Email:wesley.stivers@us.atlascopco.com) and Versie Wallace can be reached at: 303-513-5793 (Email:versie.wallace@us.atlascopco.com).



The program combines classroom and simulator training.

MASTER THE DRILL

Why implement Master Driller training?

- Higher productivity,
- Reduced costs of damaged equipment,
- Increased safety and
- Documentation of workforce skills.

What sets the Master Driller Program apart from others is its incorporation of simulated tramming and drilling in an actual cab, which gives participants a safe learning experience and eliminates the risk of damaging equipment or injuring themselves. The Master Driller Program consists of theoretical and manual training available through all Atlas Copco customer centers, who can rent the simulators if they don’t yet have them. The program is suited for novice and experienced operators who progress through Bronze, Silver and Gold levels of training, which each take just a few days.

Bronze level, learning in the classroom or e-learning at home site — Here, the training covers topics such as rock types, technique and theory of drilling.

Silver level, simulator training — In this level, trainees learn by using a rig and by working with a hands-on simulator. The simulator features large LED monitors mounted in the window spaces of the rig’s cab so the environment appears real. The cab moves in response to the actions of the operator using real controls. (In the case of training on blasthole drill rigs, the simulator even gives prompts as the rig enters unstable ground. And just as in an actual rig on the job, if the operator attempts to auto-level the



drill before a safe position is reached, the drill will not allow the procedure. The operator must successfully stabilize the rig before leveling can resume.)

Gold level, on-the-job — An Atlas Copco product specialist works with trainees one-on-one at their job site. Previous training is reviewed on an actual rig and repeated if necessary.

Only after the Gold level is passed is an operator called a master driller.

For an Atlas Copco Boomer E2C, for instance, the combined training scenarios include:

- Position feeders,
- Basic drilling,
- Basic tramming,
- Setup and positioning,
- Navigation with different methods,
- Advanced drilling,
- Advanced tramming and
- Calibration.

Robert Dikmen, a training manager at the Mining and Rock Excavation Service Division and responsible for the Master Driller Program, said, “The feedback we’ve received from our customers is that the operators’ understanding increased and translated directly into greater production and greater safety.”

The Master Driller Program with simulated drilling in a simulator cab of an actual drill rig has been offered for two years. With the success the program has shown, Dikmen said Atlas Copco is now extending the simulator fleet and developing a program for more products to complete the master driller offering.

Simulators are currently available for the following products:

- Boomer E2C
- SmartRig D7C
- SmartRig D9C
- SmartRig F9C
- FlexiRoc D50-D65
- SmartRoc D65
- PitViper 271
- Simba E7C

NEW OWNER OF FREEDOM INDUSTRIES MUST FACE FALLOUT OF WEST VIRGINIA CHEMICAL SPILL

BY STEVEN MUFSON, WASHINGTON POST



It took just one week for Pennsylvania coal mining executive Cliff Forrest, the new owner of Freedom Industries, to discover that one of the six-decade-old storage tanks he had acquired at the end of December was leaking a toxic chemical into the Elk River that supplies water to more than 300,000 West Virginians. And overnight, an obscure corner of the chemical and coal business became headline news.

It's not a sexy business. The chemical that leaked is used in a process called "froth flotation." Basically, it creates bubbles that attract fine coal particles. Add a quart of the chemical to a 1,000-gallon-a-minute slurry of coal in the cleansing separation process, and coal mining companies can skim off the particles, dry them and sell them as fuel.

It's been a pretty good business niche. Freedom Industries buys and stores chemicals from companies including Eastman Chemical, an international \$12 billion business, and Georgia Pacific Chemicals, a unit of the Koch brothers' Georgia Pacific, one of the world's paper product giants. Then Freedom Industries sells to companies such as Alpha Natural Resources, one of the country's biggest coal producers. More than 100 plants in West Virginia use froth flotation.

Forrest, through another firm he owns, paid roughly \$20 million to acquire Freedom Industries and orchestrate its December 31 merger with four tiny distribution, blending and storage firms that act as middle men between big chemical and big coal companies,

according to a person close to the company but not authorized to speak for it. He added that Forrest just "had the misfortune of buying a plant just before all hell broke loose."

Ever since, Freedom Industries has battered down the hatches. It issued a statement on January 10, the day after the spill was discovered, and nothing since. Chief executive Gary Southern, suffering from pneumonia, made one brief and awkward appearance sipping from a water bottle before TV cameras. Two days later, Charles Ryan, the crisis public relations firm Freedom Industries hired, decided it would not represent the company. Newspapers have scoured state records to learn about the company but have found slim pickings apart from the criminal record of a long-departed executive.

Crisis management experts said the public reaction of Freedom Industries is not unusual but not a model either.

"Mostly what organizations do in these kinds of moments is duck," said Davia Temin, a New York-based media specialist and crisis manager. "They do not come forward. They do not put their CEO forward. And they do not work out of the playbook of good crisis management, probably because they don't have anything good to say."

Temin said such companies "go underground, though unfortunately in this case their underground is toxic." And if they're truly avoiding the spotlight, then "tomorrow you will no longer be Freedom Industries, it will be Liberty Industries or Apple Pie Industries."

Old Problems

In Charleston, critics say that Freedom Industries may have new owners, but it has old problems that needed fixing. The facility, perched on a steep bank of the Elk River, has 13 tanks built in the 1940s and 1950s, said Daniel Horowitz, a spokesman for the federal Chemical Safety Board. The site was formerly used by Pennzoil/Quaker State as a gasoline and diesel terminal. The 35,000-

gallon tank that leaked is about 20-ft high and sits on a concrete pad surrounded by dirt. Encircling that tank and some others is a cinder block containment wall with visible cracks in it, Horowitz added.

A state Department of Environmental Protection official said the agency found that a clear liquid, thicker than water but not as thick as syrup, had pooled in a roughly 40-ft square and was flowing through a crack in the base of the cinder block wall.

The person close to Freedom Industries, which has hired two contractors to help with the cleanup, said the company has emptied the tank and looked inside. He said the bottom of the tank had been pushed inward, suggesting damage from water underneath that froze in the unusually harsh cold earlier that week. He added, however, "there are many, many additional pieces of information needed before anyone knows why the tank failed."

That's not stopping the plaintiffs' attorneys, who have already filed lawsuits against Freedom Industries for negligence. They have also named Eastman Chemical, the manufacturer of the licorice-smelling chemical that leaked, and the West Virginia American Water Corp., which kept its intake pipe open and earlier failed to heed recommendations from the state to move a water intake pipe located about a mile and a half downstream from the chemical storage tank site.

"It's got broader implications than West Virginia," said Kevin Thompson, a lawyer who filed a class-action suit in federal court against the three companies on Monday, January 13. "There are so many chemicals out there that are not properly characterized. It's only after they dump it in our water and it smells like licorice that we know about it. If it didn't smell like licorice, we wouldn't even know."

Many Players

Untangling the corporate who's who is complicated.

Freedom Industries, which was created in 1986, sells a variety of chemicals. On its Website, it says it maintains “bulk inventory” of six raw materials for coal flotation “to insure [sic] that custom blends for each customer can be produced 365 days per year.” It also sells chemicals for controlling dust, treating water and combatting freezing conditions.

The company had a colorful executive in the past. One of the company’s founders, Carl L. Kennedy II, was charged with failing to pay more than \$200,000 in income taxes, according to news reports at the time. In 1987, he pleaded guilty to selling between 10 and 12 oz of cocaine, according to the *Charleston Gazette*. A person familiar with Freedom Industries said Kennedy left the company long ago.

The current president, Southern, comes from Britain but has worked in the U.S. chemical sales business for more than two decades, according to a person familiar with the company. West Virginia secretary of state records show that Southern was president of a chemical sales company called HVC, which in 1998 did an estimated \$72.5 million in business.

In December, Freedom Industries was acquired by a Stoystown, Pa.-based company called Chemstream, which also blends and sells chemicals to industrial customers, according to the person familiar with the company. The company’s Website says it began as a distributor of chemicals for the mining industry.

Chemstream is owned by Forrest, according to the person. Forrest is president of Rosebud Mining, a Kittanning, Pa.-based company he founded in 1979 and which is now the third-largest underground coal producer in Pennsylvania with 1,400 employees in Pennsylvania and Ohio.

On December 31, Freedom Industries merged with local companies Poca Blending, Crete Technologies and Etowah River Terminal. The toxic chemical concoction that leaked into the river was stored in three of the tanks at the former Etowah terminal, the state Department of Environmental Protection said.

The person close to Freedom Industries said that Chemstream had hired two firms to do due diligence before its acquisition and had plans to “bring maintenance items up to speed.” He described the Freedom Industries owner and executives as “upstanding guys.”

Much Unknown

Eastman Chemical sold Freedom Industries this particular batch of chemical, called 4-methylcyclohexane methanol, or, more simply, crude MCHM. Eastman spokeswoman Maranda Demuth said Eastman’s safety sheet for customers warns that “this product should not be released into a drain, sewer or stream.” She said it is the responsibility of the customer and local, state and federal agencies to ensure operations are safe and comply with regulations.

Demuth also disputed assertions by critics and regulators that the company had not supplied much information about 4-MCHM. She said Eastman had filed a “Premanufacture Notification” with the Environmental Protection Agency in 1997 for a component of crude MCHM for use in coal processing. “EPA reviewed the notification and did not request any additional testing,” Demuth wrote in an email. She said the tests were done at “reputable laboratories where rigorous internal review processes were performed.”

But Horowitz of the Chemical Safety Board said that the safety data sheet for the chemical “has a great many fields, which say ‘no data available.’” Under the section titled “most important symptoms and effects, both acute and delayed,” Eastman’s forms says “no data available.” Under toxicological effects of inhalation, “no data available.” It was the same for whether it causes cancer, affects reproduction or affects specific organs.

“There is very little available testing data on its toxicity,” Horowitz said.

On Thursday evening, January 9, the House Energy and Commerce Committee’s ranking Democrats, Henry A. Waxman (Calif.) and Paul D. Tonko (N.Y.), wrote to Eastman’s chief executive, Mark J. Costa, asking that he immediately provide unredacted copies of all studies the company did on the health and environmental effects of MCHM.

Trouble in the Water

American Water played a key role in the fiasco, too. Its water plant was built in 1972, and company spokeswoman Laura Jordan said that the Elk River was a perfect spot for an intake pipe, much better than the nearby Kanawha River, which she said was home to several chemical and industrial plants.

But in retrospect, the intake pipe was very close to the Etowah Terminal now part of Freedom Industries.

Jordan said that Freedom Industries told American Water about the spill just before noon on January 9. The person close to Freedom Industries said cell-phone records show that the water company was notified about an hour earlier. In any case, American Water kept its intake pipe open figuring that it could handle the contamination with its own treatment facilities. American Water engineers were told to keep watch and add more carbon to the company’s carbon filters, Jordan said.

She said that Freedom Industries initially mischaracterized the chemical that was leaked, saying it was a coagulant that would sink rather than a foaming agent that would float. By midafternoon, the water company learned of the error.

The water company could have drawn on reserves to avoid the crisis, according to the person close to Freedom Industries. But Jordan said the water reserves would last only a few hours and that it was better to keep the water treatment plant open so people would have sanitation water and water for fires if needed.

Freedom Industries is also looking at whether the water company had a leaking pipe on higher ground than the storage tanks. It is looking at whether the leaking water might have frozen under the tank and caused damage that way. The person close to Freedom Industries said that the water company contacted a contractor two years ago but only made repairs there this week.

It all has the makings of long-running, soap-opera-style litigation.

“I have a whole gang of people working on it,” said Thompson, the plaintiffs’ attorney. They include an environmental engineer, a toxicologist, an aquatic biologist and a physician. His clients include Carolyn Burdette, a beautician who lost \$400 in business; the Vandalia Grill, which said it lost \$10,000; Crystal Goode, a single mother of three who worried about exposure to the chemical; and the owner of Mousie’s Car Wash in Charleston, who seeks business damages and health monitoring.

When he filed the suit, Thompson said, “I had to put a number down so I asked for \$100 million.”

Editor’s Note: This article is reprinted with permission from the Washington Post.

POLISH COAL INDUSTRY FACES TOUGH DECISIONS

Accustomed to the props of socialism, mine operators are finding it hard to compete in the domestic market they used to serve

BY VLADISLAV VOROTNIKOV



A longwall shearer operator cuts coal in Poland. (Photo credit: Kompania Weglowa)

Poland's coal industry faces a serious crisis. In 2012-2013, market conditions worsened for the largest players as cheap imports applied downward pressure on coal prices. Coal production is declining and becoming less profitable. The level of industry income is falling extremely fast. In the first quarter of 2013, it dropped to PLN 1.7 billion (\$556 million) from PLN 3 billion (\$982 million) in the first quarter of 2012. The representatives of the largest state-owned coal companies say future coal exports will improve profitability, but that makes no sense, as Polish coal is losing the competition with foreign companies at home.

Poland consumes 77 million metric tons per year (mtpy) of coal, which makes it the 10th largest coal consumer in the world and the second largest in the European Union, after Germany. In 2012, 92% of electricity and 89% of heat in Poland was generated from coal and, according to the official Polish Government Energy Policy Strategy, coal should remain the key element of the country's energy security until at least 2030.

Despite all attempts by the government to stop it, production levels have been falling steadily since 1989. Today, Polish coal operators produce 60 million mtpy of brown coal and 70 million mtpy of black coal. The coal industry failed to adapt to capitalism. During socialism, the state usually paid for coal at a much higher price than it actually costs to produce. However, those days are gone and today experts agree that Polish coal miners will be unable to escape this cycle.

The problem is that coal seams in Poland are too deep to mine cost effectively. By 2030, there will be no more than 10 to 15 working mines in Poland, and production of black coal will drop to 33 million mtpy.

Representatives of the Ministry of Energy are seriously concerned about the situation. According to official statistics, coal mining costs increased by more than 5% last year, while thermal

coal prices in the region dropped by more than 12%. Coal sales have dropped more than 5% during the first half of 2013 compared to the same period of 2012. As of September 2013, the level of stockpiles reached record heights of 9 million mt.

According to the ministry, Poland will continue to burn coal until 2050, despite the domestic situation. So with an insufficient level of domestic production, Poland will import. "We cannot work without coal. So it is time to begin the work that will guarantee Polish coal in the long term. If we do not have it, then we will be forced to import coal from abroad," said Maciej Kalinski, director of the Mining Department of the Ministry of Economy of Poland.

There is also a prevalent political fear. Becoming dependent on coal imports to Russia could put Poland in a similar situation as Ukraine, which is dependent on Russian gas. Poland may find the situation hard to avoid as Russian companies increase production and coal exports.

Should Poland Invest?

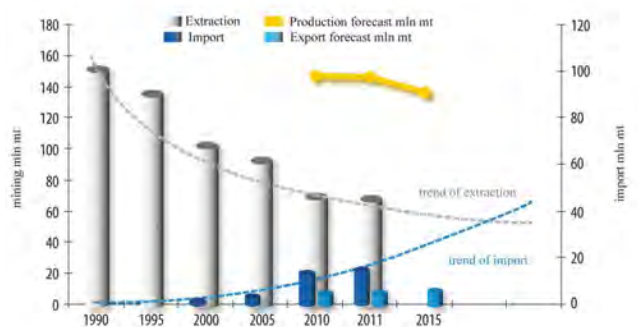
The government still has not decided if it should allocate any additional support for the existing coal mines to modernize and purchase new equipment, as well as for construction of new mines. Researchers in Krakow have developed two different future scenarios for the country's energy needs with and without state support for coal industry.

In one scenario, the government invests in the construction of new mines. The country will be using about 50 million mt of brown coal (up to 2035, consumption could reach 86 million mt) and 44 million mt of black coal produced domestically.

The other scenario does not provide any increase in investment in coal mining. By 2050, Poland will stop production of brown coal while black coal mining in Poland will amount to 22 million. Consequently, 44 million mt of black coal and all brown coal, according to this scenario, will have to be imported to Poland from abroad.

According to experts, the demand for coal in Poland to 2050 will exceed the current domestic production capacities, and therefore,

Synthetic Picture of the Coal Industry in Poland Since 1990



new investments in coal mining are required. The study emphasized that there is no possibility of replacing coal with natural gas as it has no reserves. [Editor's note: This seems unusual considering the amount of deep coal reserves.]

The government will decide on this issue in a couple of years. In the meantime, experts noted that Poland will have a strained economy will little money to invest in an unprofitable sector of the economy. At the same time, the Polish government continues to invest in a restructuring program, which is conducted by the Spółka Restrukturyzacji Kopalń S.A. (SRK). The aid program granted to SRK finance closure and post-closure activities and the payment of benefits to former employees of those mines.

Polish Coal Operators

After the fall of socialism, all coal mining companies in the country were state-owned. During the last 20 years, the government launched several restructuring programs aimed to decrease the level of mining and improve the profitability of the companies. The programs have provided for the partial privatization of the mining companies. Today, it is operating several main coal mining companies including state-owned Kompania Węglowa SA — the largest coal producer in Europe, Katowicka Grupa Kapitałowa SA and two private companies: Jastrzębska SW SA and Lubelski Węgiel Bogdanka SA. These four companies account for about 92% of all coal mining in Poland.

Kompania Węglowa SA (KW) accounts for about half of coal mining in Poland and is suffering serious losses. The company ended the first half of 2013 with losses of about \$31 million. The head of the KW suggested, based on the first half performance, that the balance for the year also will be negative.

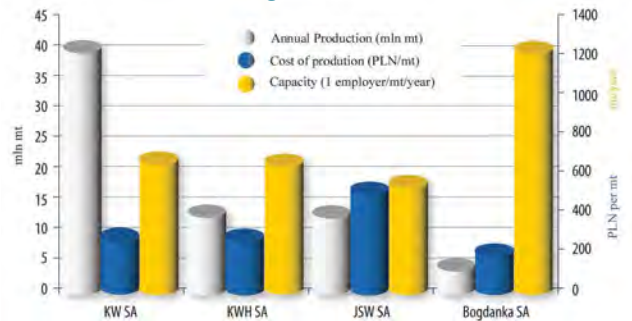
According to the Ministry of Economy Affairs, in the first half of 2013, the price of thermal and coking coal of KW and Katowicki Holding Węglowy (KHW) significantly decreased, which cut the income of both companies. The average price of coal for both companies during the first half of 2013 was \$86.25/mt, reflecting a decrease of more than 12% over last year.

Since early September 2013, KW vigorously implemented a so-called adaptive plan that will help the company deal with the tough financial situation. One of its goals is to restructure the Piekary and Brzeszcze mines, which are unprofitable. In the long term, the goal of the company is simple, it will close all mines that gain no profit or have too low of a profit, leaving only the most valuable mines. In September, the company started to transfer miners and equipment from the Piekary mine to the Bielszowice mine. In October, 87 miners from Piekary were transferred to the work in the Pokój and Bobrek-Centrum mines.

By 2020, KW plans to shut down half of its mines — so their number will decrease from 15 to eight. With this step, the volume of coal mining for the company is projected to drop from about 38- 40 million mt in 2012 to about 25 million mt in 2020. At the same time, during this period, the company may increase the volume of coking coal mining. In 2012, KW produced 2.3 million mt of high valuable coking coal (type 34). During the coming years, KW plans to allocate the largest part of all investments for that period to coking coal mines so the volume of its production should rise by 3.2 to 3.5 million mt until 2020.

KHW and Jastrzębska Spółka Węglowa (JSW) currently have almost equal shares in Polish coal production. The annual volume of production of KHW is about 12.8 million mt and JSW produces 13.3 million mt. Both of these companies are dealing with almost the same problem as KW. However, JSW is the largest producer of

Indicators Characterizing the Largest Coal Mining Business in Poland



coking coal (type 35). By 2020, the volume of coal mining of these companies will also drop, so KHW will produce about 5-6 million mt of coal, while JSW will mine about 9-11 million mt of coal with the main focus on coking coal.

Lubelski Węgiel Bogdanka is the largest private company and has consistently implemented its business plans, which says it should have about a 20% share of the market of thermal coal in Poland by 2015. The main active mine is the Bogdanka coal mine, which is a large mine in eastern Poland, about 197 km southeast of Warsaw. Bogdanka represents one of the largest coal reserves in Poland having an estimated 265.3 million mt of coal. Annual coal production is currently 7.5 million mt.

In addition to the relatively small amount of coal production, about 5.8 million mt in 2011 and 7.8 million mt in 2012, Bogdanka is the most modern mine and has the highest level of productivity. It is the largest coking coal producer not only in Poland, but in all of Europe. According to its own estimates, the volume of investments in modernization and upgrading at the technical level and infrastructure in 2007-2014 should reach PLN 600 million (US\$197 million). It is the only coal company in Poland that reported strong revenue and profit indicators for 2013.

Further Privatization

Further privatization might be one of the best ways to rescue the other failing coal companies. Up until 2009, all of Poland's coal mining companies remained fully owned by the state treasury, until Bogdanka became the first coal-mining company to be privatized when it was listed on the Warsaw Stock Exchange. Poland's accession to the European Union around this time and the subsequent obligations to abide by state intervention rules forced the treasury to speed up its restructuring efforts. The government now has a stated aim to fully privatize all coal-mining companies in the coming years.

JSW was partly listed (33%) on the stock exchange in 2011. It is regarded as one of the better run mining companies in Poland with reserves of good quality coking coal and a well-established customer base. JSW sold 5 million mt of coking coal in 2011, and it has substantial coking facilities of about 3- to 4-million-mt capacity.

The realization of a fully privatized coal mining industry still faces many challenges. The task of effectively restructuring KW and KHW should prove much more difficult to accomplish compared to JSW or Bogdanka. Both of these companies have very strong and influential trade unions and they are producing thermals coal, which do not command the same prices as coking coal.

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PRESSURIZING WITH DUST COLLECTORS

Guidelines on how to apply a concept that is appropriate for mine and plant environments, where dust generated during crushing, screening and conveying must be controlled to protect workers, office spaces and sensitive equipment

BY PABLO ROCASERMENO



This 48-cartridge dust collector pressurizes and conditions the control room of a gold-silver mine located at an elevation of more than 15,000 ft (4,572 m).

Pressurization is a well-known ventilation technique in which a positive or negative atmospheric pressure is maintained in an isolated or semi-isolated environment. A clear way to illustrate this principle is with an example of the health care industry, where pressurization has been used for many years for infectious disease control.

A patient with an immunodeficiency disorder will typically be housed in a positive pressure isolation room, which maintains a flow of air out of the room, thus protecting the individual from contaminants and pathogens, which might otherwise enter. Conversely, a patient with a contagious disease will be housed in a negative pressure isolation room, which maintains a flow of air into the room to keep the infection from spreading to other patients and health care workers.

In mining environments, positive pressure (known as “inflating the building”) is similarly used to keep particulate or gaseous contaminants out of a room,

creating an air barrier between the outside and the inside. If someone walks into a positively pressurized environment and opens the door from outside, they will feel the “whoosh” of air escaping due to the higher pressure of the air inside the room. This is the desired effect when they are trying to protect the contents of the room from dirty outdoor air conditions, from dust or fumes generated by an adjacent production process, or even from excess humidity that might seep in through the walls or other openings. Offices, labs, electrical and server rooms at mine sites are especially prone to dust infiltration, which can create unpleasant working conditions while causing problems with critical equipment, especially electronics.

Conversely, in a facility where toxic minerals are being processed, negative pressure may be applied — sometimes in conjunction with containment systems — to prevent the dust generated in a process-

ing space from cross-contaminating other areas of the plant.

To guard against cross-contamination and maintain desired air quality during either positive or negative pressurization, proper air filtration is a necessary component of the process. High-efficiency HVAC filters (ASHRAE-grade or HEPA filters) are the most common solution, but cartridge-type industrial dust collectors can offer an effective and sometimes overlooked alternative for applications where dust loads are extremely heavy and filter life is prohibitively short.

Pressurizing with dust collectors is highly applicable to mining environments, where high volumes of dust are generated during crushing, screening, conveying, etc. Areas that are most commonly protected through pressurization include:

- Control rooms,
- Compressor rooms,
- Offices,
- Quality control labs,
- Substations, and
- Electrical equipment and motor control center (MCC) rooms.

Deciding When to Pressurize

How does an engineer decide whether pressurization is a good choice? Field experience at mines shows that in most cases it is a good practice to pressurize. The only time that pressurization will not make sense is when the room or space is far away from the dust generation source (crushing plant, concentrator, dirt road, etc.). Yet the decision cannot be based solely on the volume of dust to be controlled, because other factors come into play, such as the type of dust, conditions inside and outside the space, and what (or whom) they are trying to protect.

If someone is protecting electrical equipment that costs \$100,000 from damage or from creating a safety hazard

due to contact with dust, it makes sense to invest in a \$20,000 pressurizing system to protect that equipment. But even less costly equipment containing filters, bearings and lubricants, for example, can benefit from a dust-free environment that reduces maintenance and improves operating reliability. Also, another common reason for pressurization is worker protection; i.e., to comply with regulations for exposure levels of contaminants. Not only will they be in compliance and preserve workers' health, but morale and productivity will also be enhanced.

Climate considerations might also impact their cost analysis, for example, in colder climates or during winter season, one can take advantage of the "free cooling" and use a pressurizing system for conditioning, saving substantially on air conditioning costs required to keep servers and electrical equipment from overheating.

Return on investment should typically be less than two years for pressurization to be cost-effective, and field experience shows that the payback is often much faster. Though as stated before, in many cases, the main justification is to guarantee a certain air quality in a space to protect something or someone valuable. The technology can be applied whether it is a new construction, expansion or renovation project. Retrofitting of air handling units, although possible, can be more costly and complex depending on the set-up and location.

Deciding How to Pressurize

As noted earlier, pressurization with dust collectors is best suited to heavy-dust load-



A small cartridge collector is used to pressurize an electrical room at a mine located in a warm climate. The dust collector is sized for 10% of the capacity of the electrical room's backpack-type A/C unit used for cooling.

ing applications where HVAC filters will not have an acceptable life. In extremely dusty conditions, high-efficiency HVAC filters can quickly become overloaded and may require change-out every few months or every few weeks in some cases, even with pre-filters in place to protect the more expensive primary filters.

Cartridge dust collector filters, by contrast, are designed specifically to handle high-dust loads in mining and other industrial environments. A dust collector has the capability to automatically pulse-clean its filters using very brief bursts of compressed air that blow dirt off the filter surfaces and down into a collection device. When used in a pressurization system, high-efficiency cartridge filters can last for years before needing replacement.

To determine the best choice for an application, begin with a cost analysis that evaluates the space to be pressurized and compare the two filtration technologies (i.e., HVAC vs. dust collection filters). What will be the initial cost of the equipment/hardware and the filters themselves? What will be the cost of electrical energy required to operate the system? What is the life expectancy of the filters under the anticipated dust loading conditions? Based on expected change-out frequency, one can arrive at an annual cost estimate that takes into account not only the price of the equipment, but such factors as labor cost to change the filters, equipment downtime, inventory, disposal, etc.

Dust Collection Equipment Selection

If the analysis determines that dust collection is the most cost-effective approach, here are some general guidelines on the types of equipment best suited to pressurizing.

Type of dust collector: Cartridge style dust collectors are the system of choice because they typically offer much higher filtering efficiencies than traditional bag-house collectors, a necessity when protecting workers or sensitive equipment from high levels of fine dust. Cartridge collectors also operate at lower pressure drop, for more efficient performance. The dust collector will be located outdoors, so make sure it is equipped with weather-resistant components and controls.



A 10-cartridge dust collector is installed on the roof of an MCC room to protect the equipment inside from dusty conditions of this South American copper mine. This equipment is operating above 4,000-m elevation.



Multiple dust collectors, each containing six high-efficiency filter cartridges, are used to pressurize electrical rooms at a copper mine. The units have been operating for more than two years without a filter change. Blowers are controlled by VFDs and pressure sensors inside the room.

Wet scrubbers: When pressurizing to protect a space from gaseous contaminants, one needs to find out first what type of gases they are dealing with. Then they will be able to determine if a wet scrubber system should be used or an adsorption filter system using a substance such as activated carbon. If dust is present, however, they will still need the cartridge dust collector for particulate filtration installed upstream of the gas filtration system.

Filter media: A very high-efficiency filter (MERV 15 or 16) is recommended for pressurizing applications. Cartridge filters using nano fiber or other high-efficiency filtration media are especially well-suited to this use. Typically, an outer layer of extra filtration fibers will ensure the maximum efficiency of the media from the very first day. This technology increases the efficiency and allows maximum filtration with low pressure drop, thus improving the energy performance of the system.

Don't rely solely on MERV values or filter efficiency percentages to predict performance, however. Although these measures are useful for comparing different filters, it is more important to ascertain that emissions will be at or below required thresholds. Ask the filter manufacturer for a written guarantee of emissions performance stated as grains per cubic foot.

As noted, cartridge filters will only need infrequent change-out in pressurizing applications, but it is good practice to replace filters every two to three years. An

older filter may develop a hole or leak after time and will no longer deliver the guaranteed efficiency.

HEPA or after-filters, also known as safety monitoring filters, may be added to the ductwork downstream of the collector to provide an extra measure of protection for critical applications. In the unlikely event of an air leak through the dust collector filters, the after-filters will provide back-up protection. In certain cases, HEPA filters will be needed for regulatory compliance.

Variable frequency drive (VFD) and pressure sensor: A VFD provides precise electrical control of dust collector fan speed and is highly efficient in maintaining the desired airflow through the collector. It is a must for pressurized applications, and should always be used in conjunction with a pressure sensor in the room. The two devices will work in tandem to monitor and control pressure.

Air-conditioned vs. Non-air-conditioned Spaces

Finally, the approach to pressurizing will vary depending on whether or not the space to be pressurized is air-conditioned.

If the space does not have to be heated or cooled, dust collector airflow should be calculated based on ventilation needs for indoor air quality + air leakage through cracks and openings (i.e., using standard formulas for infiltration). False ceilings, raised floors and other construction details may also impact the calculations.

For suggested velocities across openings and their corresponding pressures, see table 7-1 of the *ACGIH Industrial Ventilation: A Manual of Recommended Practice*.

If the space to be pressurized requires heating or cooling, dust collector airflow should average between 10%–20% of the HVAC unit airflow at a given capacity. This approach assumes the HVAC system has been properly sized to account for infiltration and will ensure one does not overwork the HVAC system by injecting too much humidity. It is important to use heavy-duty air handling components to withstand the dirty conditions, a sometimes overlooked step.

General ventilation guidelines for industrial applications recommend a difference of 5% between the supply and exhaust airflow. A good standard is to set a pressure differential of 0.04 +/- 2 in. wg. Uncontrolled pressure could have negative effects, creating high-velocity conditions that result in slamming doors and back drafts. Most designers recommend a pressure sensor inside the room to adjust the supply air using a VFD on the fan of the pressurizing unit.

For example: To treat an area with office workers using an extraction system mounted on top of a building, someone would need a certain number of air changes per hour, which will determine the airflow. They should then add 5%–10% more on top of that airflow to create pressurization. So, if they need to extract 1,000 cfm from the room, they will want a dust collector with 1,100-cfm capacity to make sure they are injecting more air than they are extracting. If there are some openings or potential leak paths, it isn't a bad idea to oversize the dust collector slightly or calculate the infiltration and add it to the formula. And as noted, a VFD and pressure sensor should again be used as controls.

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BEST PRACTICES FOR BEARING PROTECTION

A simple method now allows VFD-induced electrical bearing damage to be prevented — not just repaired

BY ADAM WILLWERTH

Variable frequency drives (VFDs, also known as inverters) can save 30% or more in energy costs. Because of this, they have been cited as a key technology for those wishing to make their processing plants, HVAC systems and other equipment more energy-efficient. Unfortunately, whether used to control a motor's speed or torque, VFDs often induce voltages and currents that can damage bearings.

In fact, the costly repair or replacement of failed motor bearings can wipe out any savings a VFD yields and severely diminish the reliability of an entire system.

Until all motors are designed with built-in bearing protection, plant maintenance personnel and motor repair shops will continue to replace damaged bearings. But if a motor's bearing problem is fixed properly and proper mitigation installed, it only has to be done once. Better yet, the latest diagnostic techniques (vibration analysis, thermography, shaft-voltage testing, etc.) can prevent electrical bearing damage or nip it in the bud. Whether working on a brand new motor or one already in service, an informed technician can now protect bearings during the life of the motor. This is what is meant by "best practices."

Damage

The high switching frequencies of today's VFDs produce parasitic capacitance between a motor's stator and rotor. By now, it is widely understood that, once the resulting shaft voltages overcome the dielectric properties of bearing grease, they discharge along the path of least resistance — typically through the bearings.

These discharges are so frequent that they create millions of tiny fusion craters. Before long, the entire bearing race wall can become marked with countless pits known as frosting. A phenomenon known as fluting may occur as well, shaping the frosting into washboard-like ridges across the bearing race. This causes noise, vibra-

tion, increased friction and catastrophic bearing failure.

As the bearings degrade, the tiny metal particles blasted from the fusion craters intensify friction and abrasion, heat up the bearings, and burn the contaminated grease. Too often, the end result is bearing failure and costly, unplanned downtime.

Failure rates vary widely, but evidence suggests that a significant portion of failures occur only three to 12 months after system startup. Because many of today's motors have sealed bearings to keep out dirt and other contaminants, electrical damage has become the most common cause of bearing failure in AC motors with VFDs.

Inspect, Then Protect

Cutting and carefully inspecting the bearings of motors needing repair will often provide information that can be used to prevent a recurrence of the problem.

If inspection of the old bearing indicates electrical damage, the most reliable and cost-effective way to protect replacement bearings is to install a modern shaft grounding ring. Unlike older single-point contact brushes, these rings completely surround a motor's shaft with contact points. Conductive microfibers should line the ring's entire inner circumference, boosting the electron transfer rate (Figures 1 and 2). A properly installed ring provides a very low impedance path from shaft to frame, safely bleeding off damaging voltages to ground and bypassing the motor's bearings entirely. And because the microfibers work with little or no contact, they do not clog up and wear out like conventional grounding brushes.

A growing number of forward-looking motor manufacturers have recently added a factory-installed shaft grounding ring as a standard or optional feature on certain models, but they are still exceptions to the

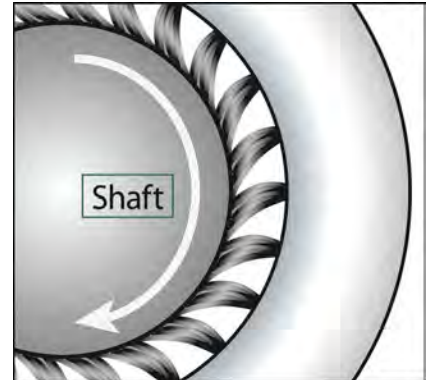


Figure 1: The best grounding rings are lined with flexible, conductive microfibers that completely surround the motor shaft.

rule. Many industrial supply houses and distributors of motors and bearings sell grounding rings that can be installed on new, refurbished or in-service motors.

Tips for Ring Installation

To maximize a grounding ring's effectiveness, all electrical paths must be conductive. Paint on the motor's faceplate must be removed. Likewise, the motor's

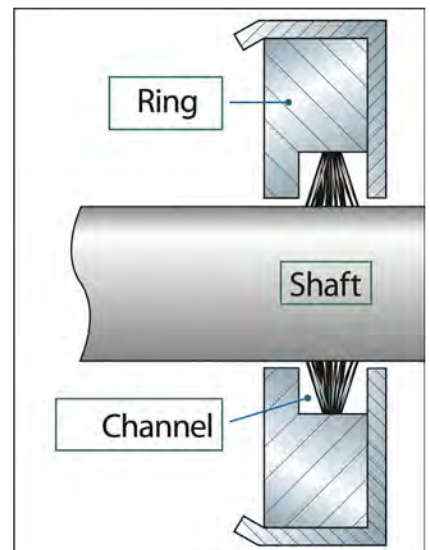


Figure 2: A channel locks the ring's conductive microfibers in place around the motor shaft and helps protect them from dirt, oil and other contaminants.

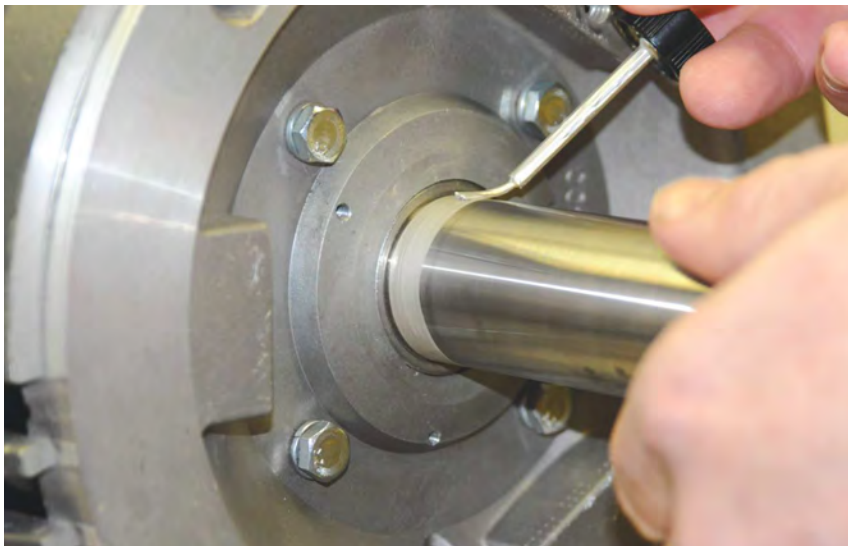


Figure 3: Prior to installation of a grounding ring, the motor shaft must be cleaned down to bare metal, free of any non-conductive material. Conductivity can be further enhanced by coating the part of the shaft that will contact the ring with colloidal silver.

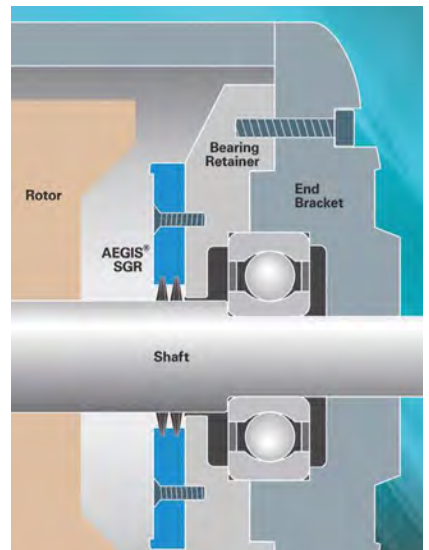


Figure 4: Internal installation of the grounding ring provides extra protection from dust, dirt and other contaminants in severe-duty applications.

shaft must be cleaned down to bare metal. Even after scrubbing with emery cloth, wiping the shaft with a non-petroleum-based solvent will remove unseen residues. After cleaning, the conductivity of the shaft should be checked with an ohm meter. If the reading at the section that will contact the ring's microfibers is higher than two ohms, the shaft should be cleaned again.

A grounding ring should never operate over a shaft keyway, which has sharp edges and could reduce conductivity. On some motors, the dimensions of the spacer and mounting screws can sometimes be adjusted/changed to avoid a keyway. If this is not feasible, the portion of the keyway that will contact the ring's microfibers should be filled with epoxy putty.

Conductivity should be further enhanced by lightly but evenly coating with colloidal silver any portion of the shaft that will contact the ring's microfibers. This will also help retard corrosion (Figure 3).

Threadlocking gels and liquids other than conductive epoxy are not recommended for the screws that mount the ring to the motor, as they might compromise the conductive path to ground.

The ring should be centered on the motor shaft so that its microfibers contact the shaft evenly.

When mounting the ring externally to an end bracket, split rings designed to slip around an in-service motor's shaft instead of over its end simplify installation.

After installation, testing with an ohm meter is again recommended. The best method is to place one probe on the ring and one on the motor frame. (The motor and drive must be grounded to common-earth ground in accordance with applicable standards.)

Variations Suitable for Mining

For environments where the motor will be exposed to excessive amounts of dirt, dust or other debris, it may be necessary to protect the ring's fibers with an O-ring or V-slinger. Bearing isolators with built-in circumferential grounding rings are also

available. For severe-duty environments such as mining, however, mounting the shaft grounding ring inside the motor provides the best protection from contamination (Figure 4). Using conductive epoxy or screws, the ring can be mounted directly to a bearing retainer (Figure 5). An additional machined spacer will keep the ring away from the bearing grease cavity. Metal-to-metal contact is still essential, so the bearing retainer must be free of any coatings or other nonconductive material where it will touch the ring.

For horizontally or vertically mounted motors with horsepower of 100 (75 kW) or



Figure 5: For internal installation, the grounding ring is often mounted in a bearing retainer.

less and single-row radial ball bearings on both ends, a shaft grounding ring can be installed on either end. For horizontally mounted motors with horsepower greater than 100 and single-row radial ball bearings on both ends, the bearing housing at the nondrive end must be electrically isolated to disrupt circulating currents. Options for achieving such isolation include insulated sleeves, nonconductive coatings, ceramic bearings or hybrid bearings. The grounding ring should be installed at the drive end.

For any motor in which the bearings at both ends are already insulated, the drive end is preferred for installation of a grounding ring, to protect bearings in attached equipment such as a gearbox, pump, fan or encoder.

For any motor with cylindrical roller, Babbitt or sleeve bearings, the end with such bearings should be electrically isolated, and the grounding ring should be installed at the opposite end.

Testing and Analysis

Measuring shaft voltage on a VFD-driven motor provides valuable information for determining whether there is a risk of electrical bearing damage. The best time to take such measurements is during the startup of a new or recently repaired motor. Every motor has its own unique parameters. Combined with vibration analysis, thermography or other diagnostic services, results (including saved oscilloscope-screen images) can be presented in a report to the supervisor. Results should then be used in developing preventive and predictive maintenance programs.

Shaft voltages are easily measured (using appropriate safety procedures) by touching an oscilloscope probe to the shaft while the motor is running. The best probe will have a tip of high-density conductive microfibers to ensure continuous contact with the rotating shaft. A portable oscilloscope with a bandwidth of at least 100 MHz should deliver accurate waveform measurements. Probe/oscilloscope kits are available.

Just as shaft voltage measurements can show that a motor's bearings are in danger of electrical damage, they can also confirm that a shaft grounding ring is working. If a proven ring has been

properly installed, typical discharge voltage peaks should be less than 10 volts.

In summary, routine inspection, testing, and analysis can provide advance warning, and when bearings fail, proper repair practices can fix the problem for good. Motor shaft grounding rings such as AEGIS bearing protection rings can be installed during motor repairs or on new motors before they are put into service.



About the Author

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Continuous
Contact
Rotating
Shaft
Portable
Oscilloscope
Bandwidth
At least 100 MHz
Deliver accurate
Waveform
Measurements
Probe/oscilloscope
kits are available
Just as shaft voltage
measurements can show
that a motor's bearings are in danger of electrical damage, they can also confirm that a shaft grounding ring is working. If a proven ring has been

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SOUTH AFRICA'S VR STEEL SUPPLIES DRAGLINE BUCKET TO NORTH AMERICA



A new 146,400-lb dragline bucket heads to work in Texas.

VR Steel, a global leader in the steel and mining industry, launched their North American division by delivering a VR Steel-designed dragline bucket that left from Conroe, Texas, to a mine in Elgin, Texas, on Tuesday, December 4, 2013.

This VR dragline bucket weighs 146,400 lb and was built by local Texas fabricators, C&C Metals and Mackanan Fabrication in Conroe, as well as Buffalo Industrial Supplies in Buffalo, Texas. The decision to build the bucket in Texas was part of a corporate decision to build and support equipment with local suppliers in the specific territories where their customers are located.

This successful delivery is the culmination of a business decision by VR Steel to expand the company's footprint into North America in 2012 after attending the MINExpo 2012 in Las Vegas. This is where its North American facilities were launched with the appointment of two vice presidents responsible for the marketing and sales of its award-winning earth moving equipment designs. Equipment includes dragline buckets, off-highway truck bodies, hydraulic face shovel buckets and dippers for rope shovels.

VR Steel established a warehouse facility in Conroe, where parts were shipped to from their South African factory, and has also established relationships with various businesses in the Houston area as well as other locations in the USA from where parts were procured. This will be the loca-

tion of VR Steel's main warehouse facility with satellite distribution in the areas where their customers are located. All procurement of material and parts will be located at this facility.

This company has come a long way since it opened its doors as a specialist steel distributor in 1992. Worldwide operations include a corporate head office in South Africa with a research and development hub facility of 323,000 sq-ft with a 135,000-sq-ft covered work area. It has an established workshop in Shanghai, China, and a newly established workshop 600 km west of Beijing in partnership with China-Coal Pingshou Coal Co. It has also recently opened an office in Santiago, Chile, to handle the South American market.

With the knowledge collected while assembling this bucket, VR Steel is confident that relations across the North American territory can only thrive.

Matrix Receives Mine Safety and Health Technology Innovations Award

Matrix Design Group LLC (Matrix) and Alpha Natural Resources (Alpha) were recently presented with the Mine Safety and Health Technology Innovations Award at the Sentinels of Safety Awards Presentation in Washington, D.C. This National Institute for Occupational Safety and Health (NIOSH) award recognizes mines and companies that have made extraordinary efforts to apply technology in ways that will improve mine worker safety and health.

Matrix and Alpha received the 2013 Coal Award for "Next-Generation Sensors for Atmospheric Monitoring Systems (AMS)." The improved air velocity, low-power methane, and flexible-use carbon monoxide (CO) sensors are designed for daily use in coal mines and improve mine safety by detecting potentially harmful developments in a mine's ventilation network. The sensors were developed by Matrix for its new MX3 permissible voice and data communications system package. The sensor bundle was designed to work with a variety of existing AMS and CO monitoring systems and has the necessary features to allow post-accident functionality.

"Matrix is excited to be recognized for the development of next-generation equipment as part of this important project with Alpha," said Matrix President Aric Pryor. "Our development team, working in partnership with Alpha engineers and mine personnel, has created an innovative set of advanced sensors that are accurate, easy to use, and work with a variety of existing AMS and CO monitoring systems. We believe these sensors will offer immediate benefits for both mine ventilation management and miner safety at underground mining operations."

Sandvik Acquires Varel

Sandvik has reached an agreement to acquire Varel International Energy Services Inc. for \$740 million. The closing of the acquisition is subject to standard regulatory approvals and certain environmental due diligence. Varel supplies drilling solutions, focusing on drill bits and downhole products.

With manufacturing sites located in Houston; Matamoros, Mexico; Aberdeen, Scotland; Tarbes, France; and Kurgan, Russia; Varel is headquartered in Carrollton, Texas.

"The acquisition continues to position Sandvik in attractive growth segments where we will deliver solutions that increase customers' productivity. This is in line with Sandvik's growth ambition and a way to leverage our technical know-how and Varel's market position," said Olof Faxander, Sandvik's president and CEO.

Varel has a strong presence in mining, but the acquisition more importantly forms a platform to enable Sandvik to enter into drilling solutions for the oil and gas sector.

Jackson Kelly Ranked First-tier for Mining and Natural Resources Law

Jackson Kelly, the law firm that regularly contributes the “Legally Speaking” column for *Coal Age*, has received national first-tier rankings in mining law and natural resources law. This is according to the recently released U.S. News Media Group and Best Lawyers 2014 “Best Law Firms” rankings.

In addition, the following practice groups were ranked tier one in Charleston, W.Va.: Energy Law, Environmental Law, Mining Law and Natural Resources Law. In Colorado, the firm was honored with tier-one rankings in Energy Law. In Lexington, Ky., the firm received tier-one rankings in Environmental Law and other areas. The firm’s Pittsburgh, Pa., office had first-tier rankings in Mining Law and Natural Resources Law.

Mississippi Lime Company Acquires Huron Lime

Mississippi Lime Co., a leading producer of lime and related calcium products, announced it has completed its acquisition of Huron Lime. This acquisition is consistent with Mississippi Lime’s continued mission to become the preferred supplier of calcium-based products and services within the lime industry. This acquisition will strengthen Mississippi Lime’s ability to deliver high-quality lime products with improved service levels.

Huron Lime Inc., with operations in Huron, Ohio, has a long history of providing excellent quicklime, and related calcium products into a variety of applications including steel processing, chemical manufacturing, construction, agricultural and water treatment. Huron Lime’s emphasis on quality and service will make it an excellent addition to Mississippi Lime Company.

Mississippi Lime Company, based in St. Louis, Mo., is a leading manufacturer of calcium products and calcium-based solutions including calcium oxide, calcium hydroxide and calcium carbonate products with production facilities in Missouri, Kentucky, Ohio, Illinois, Mississippi, West Virginia, South Carolina and Alabama.

Michelin New Tire Plant for Haul Trucks

During mid-December, Michelin celebrated the grand opening of a new 800,000-sq-ft

US10 tire-manufacturing facility in Anderson, S.C. Michelin executives and employees were joined by dozens of dignitaries from across the state, as well as local and trade-press media to celebrate the milestone just 17 months after breaking ground on the facility. The project completion is the fastest greenfield construction in Michelin’s history, according to the company.

The new state-of-the-art plant will build the largest tires, which will be a service match for 400-ton mining trucks. Speaking at the festivities, Michelin Chairman and President Pete Selleck said that the opening of the plant is the work of a lot of dedicated people. He also noted that the plant is the company’s 15th in the United States and that South Carolina is now the country’s largest tire-producing state.

“Michelin continues to make investments in multiple countries around the world that will position our company for long-term growth,” said Selleck. “It’s a source of pride to know that what we’re doing right here in South Carolina plays such an important role in our company’s global business strategy. It’s a testament to the business-friendly climate in the state and the dedicated, productive and skilled workforce that serves as the engine behind our success.”

“That we have constructed this state-of-the-art facility in 17 months is nothing short of remarkable,” said Bruce Brackett, senior vice president, Michelin Earthmover and Industrial Tires Worldwide. “These tires are no ordinary ones, and they cannot be built just anywhere by just anyone. The fact is, the Michelin Earthmover tire is a highly

sophisticated product to develop and build, and today South Carolina is the leader for the vast Michelin Group.”

Production of commercially available tires commenced during January 2014 for sale in mid-2014. Approximately 80% of the tires manufactured at the new plant will be exported, largely from the Port of Charleston.

IDC Industries Installs the Largest Gear Grinder in Michigan

IDC Industries is installing their new NilesZP24 gear grinder. This new machine, the largest of its type in Michigan, will allow IDC to better serve their customers in the steel, mining and paper manufacturing industries worldwide. IDC repairs, rebuilds and manufactures new gears and reducers from their new facility in Clinton Township, Mich. The new Niles ZP24 grinder is capable of grinding internal and external gears more than 7 ft in diameter, and includes on-board gear inspection. This machine can also grind worms sectors and cutting tools.

“The Niles ZP24 represents the state-of-the-art in gear grinding. It fits perfectly with our growth plans and our ability to provide solutions to our customers in a wide range of industrial markets,” said Jamie Pangborn, president, IDC.

IDC was established in 1968 to provide industrial drive components such as pulleys and gearboxes. It soon evolved to rebuilding gear reducers as a response to customer requirements. Now, IDC engineers and builds new gearboxes, open gears and rebuilds customer units for virtually any large industrial application.



Bruce Brackett (left) and Pete Selleck stand before a new Michelin mining tire.

WHEEL DOZER FEATURES NEW CAB, REFINED TRANSMISSION, ADVANCED MONITORING SYSTEM AND SAFETY ENHANCEMENTS



The Cat 834 wheel dozer pushes coal.

The Caterpillar (Cat) 834 wheel dozer, introduced in the mid-1960s, has set the standard for wheel dozer design and performance for almost 50 years, according to Cat, ensuring customers optimum productivity, durability and availability through multiple life cycles. The new 834K builds on the strengths of its predecessors with a new cab, drive train refinement, new monitoring and diagnostic features, new safety features and structural enhancements. Available blade types include straight, universal, semi-universal and coal, ranging in capacity from 10.3 to 29 cubic yards (7.9 to 22.2 m³).

Rated at 496 net horsepower (370 kW), the Cat C18 engine used in the 834K is available in three configurations to tailor the machine for any region of the world: Tier 4 Final (Stage IV) using a diesel particulate filter and a selective catalytic reduction system to control emissions; Tier 3 equivalent without after-treatment; and Tier 2 equivalent without after-treatment.

The C18 uses the field proven Cat mechanically actuated, electronic unit-injection system for precise control of fuel delivery. Fuel-saving enhancements for the 834K include engine-idle-shutdown and engine-idle kick-down systems, and the delayed-engine-shutdown system protects the engine from hot shutdowns. An on-demand, hydraulically driven cooling fan reduces horsepower draw for increased efficiency.

The Cat 4F/3R planetary power-shift transmission used in the 834K features a new Advanced Productivity Electronic Control Shifting system, which is designed to provide greater machine momentum through shift points, enhancing performance and saving fuel. Forced-flow oil lubricates and cools the transmission high-torque clutches to ensure long component life.

For increased productivity and precise control, the impeller clutch torque converter (ICTC) allows the operator to adjust rimpull from 100% to 25% to match hydraulic effort and rimpull to the operating situation. The ICTC system reduces tire wear and permits full-throttle shifts for greater productivity.

The 834K axles feature shaft-mounted, oil-cooled, multiple-disc brakes. The braking system can be equipped with auxiliary oil coolers for added protection. To reduce brake loads, an available automatic retarding system maintains a set downhill speed, minimizing brake use.

The 834K features a completely redesigned operator station, with automatic temperature control, new touchscreen display with soft keypad, electro/hydraulic parking brake, and the Cat Comfort III seat with air-ride suspension and integral controls — including the Steering Transmission Integrated Control (STIC) that allows convenient joystick

steering. Interior sound levels also are significantly reduced to 71 dB(A).

The 834K retains its massive full-box-section rear frame that resists torsional shock and twisting forces. Heavy-duty steering cylinder mounts are designed to transfer and effectively dissipate steering loads into the frame. Blade-mounting push beams have a “through-width” design, versus simply being attached to the sides of the frame, a design that dissipates the stress of blade corner-loading into a larger area of the frame.

New for the 834K is a redesigned rear-axle trunnion, now wider and bolted directly to the frame rails, eliminating the previously used intermediate casting and allowing loads to be more effectively dispersed. In addition, the lower articulation point (lower hitch) has been strengthened with an increase in front frame plate thickness and a significant increase in pin diameter in conjunction with a larger bearing.

A major design focus of the 834K is operator safety, and to that end, the new model features a standard rearview camera, repositioned access ladders, full-perimeter railings and ground-level panel that houses a stairway light switch, engine-shutdown switch and lockouts for the starter and transmission.

Routine service points are accessible from ground level or from large, skid-resistant platforms. Swing-out doors on both sides of the engine give ready access to daily maintenance items, and ecology fluid drains facilitate service and protect the environment. For added convenience, the Electronic Technician diagnostic port and the VIMS service port are conveniently located in the cab. www.cat.com

Robust LED Floodlight

The SturdiLED Series are mid-level LED floodlights equipped with an AC or DC driver for multiple output options ranging from 1,600 to 2,900 effective lumens. The two optical packages, 28° and 45°, accommodate a variety of applications. The SturdiLED Series is best suited for shovels, blasthole drills, off-road haulers, utility and emergency vehicles, equipment cabs,

towers, and wheel buckets. The units have a replaceable, impact resistant, UV stable lens, as well as a conformal coated circuit board and a fully potted driver. Designed, engineered and manufactured in the U.S., the SturdiLED boasts a five-year limited warranty. www.aps-supply.com



New Technology to Manage Pipeline Scaling

Flowrox Scaling Watch is a new product designed for the precise measurement of scale in pipelines and other fluid control environments. Scale is formed by the hardening of iron, salts, and other minerals in pipes and valves. This product is a wafer piece of pipeline inserted between two flanges for a precise fit that detects scale. The device uses Electrical Capacitance Tomography (ECT) technology, which allows operators to see inside piping systems without stopping the process or opening up the pipeline, and enables 3-D-imaging and measurement of nonconductive media inside process pipelines and tanks. www.flowrox.us.

Grader Simulator

Immersive Technologies has recently developed a motor grader simulator allowing for maximum effectiveness and efficiency in the training of motor grader operators, which includes a complete replica cab of the Cat 24M motor grader, with fully functional controls and instrumentation.

Through simulation, trainers are able to observe grader operators and ensure they are using correct practices in relation to a number of grading techniques, including:

- Moldboard placement, angle and cutting depth;
- Correct articulation of machine;
- Correct wheel lean use;
- Differential locking;
- Avoiding blade collisions; and
- Engine overspeed events.

The awareness provided to operators by Immersive Technologies simulation-based training ensures they are working at maximum efficiency while minimizing equipment damage. It also ensures operators are able to avoid or respond correctly to hazards and potentially life threatening scenarios.

www.immersivetechologies.com

Radio Controller

Magnetek has been granted a patent for its Enrange MHR Radio Controller, which integrates the components of a radio receiver and hydraulic controller into a convenient single unit, reducing costs and freeing up valuable space. When packaged with one of the company's transmitters, it provides a total wireless system for operating mining equipment such as continuous miners, locomotives, drills, bolters, long-wall shears, battery haulers, scoops, muckers and load haul dumps. An informative graphic display with a user interface is integrated into the MHR for in-field programming of system settings. Two-way 2.4 GHz FHSS feedback is available, providing operators with precise information about equipment performance. Numerous analog, digital, and frequency inputs and outputs are also available, which can be programmed in a variety of configurations.

www.magnetek.com/MHR



Mining Helmets

MPS Centurion, a unit of Mine & Process Service Inc., has introduced two new mining helmets in the ANSI Class E category. This includes the lightweight Concept Helmet at approximately 11.5 oz, and their latest Spectrum Helmet with integrated goggles for eye protection. Each features a clip for mounting on the front for a cap lamp, and a cord retainer on the rear, when required. Both are manufactured of ABS and include comfortable, six-point suspension/cradles. Helmets comply with



MSHA Program Information Bulletin, P07-16, regarding hardhats.

www.go-mpsinc.com

Communications Headset

The Pryme HBB-EM series dual-muff headset earphones allow the user to hear incoming signals easily. A tactile push-to-talk button mounted in the right earphone for quick, functional access, aviation-style boom microphone with flexible arm, and optional noise-canceling microphone make this headset ideal for many functions.

www.pryme.com



Haulage Software

To make it easier for engineers to start using HAULNET to deliver cost savings to their operations, RPM has added key functionality to enable users to create their haulage network on the fly. The new user interface enables users to quickly and easily build haul networks from scratch. It is as simple as using the mouse to point and click out the haulage routes across the mine site. Intuitively, the application snaps the route to the underlying surface and extends it to join existing roadways, nodes and points of interest. It also interprets and rationalizes the haulage network. It can autocorrect creation mistakes and smooth out routes, removing unnecessary detail that isn't required to perform an accurate analysis.

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- 14 Consulting or Construction Engineering
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- 16 Government departments, divisions, and institutes
- 17 Financial institutions
- 18 Distributors of machinery, equipment and supplies
- 19 Manufacturers of machinery, equipment and supplies
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ADVERTISING INDEX

	PAGE
Afton Chemical	3
Coal Age Social Media Connections	39
Coal Age Website	15
Columbia Steel	BC
IMEX 2014	18-20
Jennmar	IBC
L&H Industrial	7
Preptech	23
Terrasource Global	IFC
World Mining Equipment	11

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SAGO RULING OVERTURNED BY FEDERAL MINE REVIEW COMMISSION

The Mine Safety and Health Administration (MSHA) announced that the Federal Mine Safety and Health Review Commission has overturned a decision by Administrative Law Judge (ALJ) Jerold Feldman involving Wolf Run Mining Co.'s Sago Mine in Upshur County, W. Va., where 12 miners died in an explosion January 2, 2006. The commission found that the mine operator's failure to notify MSHA and mine rescue teams immediately after the explosion involved unwarrantable failure and high negligence.

"Although eight years have passed, the memories of that tragic day have not diminished," said Joseph A. Main, assistant secretary of labor for mine safety and health. "We are grateful for the commission's decision in this case reaffirming the importance of immediate reporting of mine accidents."

Although the explosion occurred at 6:26 a.m., MSHA was not contacted until 7:50 a.m., and efforts to reach a mine rescue team member at his home did not take place until 8:04 a.m. Consequently, MSHA issued a citation and order to the mine operator for failure to: immediately notify the agency of the explosion, comply with the mine's emergency evacuation and firefighting program, and immediately contact the mine rescue team.

Feldman concluded that commission case law permitted the operator a reasonable opportunity to investigate the event prior to being required to contact authorities. He also reasoned that the operator's negligence in not immediately reporting the incident was mitigated by mine management's wish to execute a rescue attempt and to not be barred from entering the mine. Feldman also took into account the fact that the event occurred on January 2 (when the national holiday for New Year's Day was being observed) since January 1 fell on a Sunday that year, so MSHA and state offices were closed, making it difficult to reach authorities.

On appeal, a two-member commission majority held, in agreement with MSHA, that the ALJ erred because he: (1) miscalculated the time at which the mine operator's duty to report commenced; (2) treated the intentional nature of the operator's failure to report as a mitigating factor; (3) treated the fact that the explosion occurred on a federal holiday as a mitigating factor; and (4) failed to consider the fact that, when the operator finally attempted to report the explosion, it relied solely on an off-site management official who had limited knowledge of the explosion and limited information and resources available to him at home. In addition to reinstating MSHA's unwarrantable failure and high negligence designations, the commission assessed the company with MSHA's proposed penalties of \$1,500 and \$13,000 for two separate citations.

"The operator's intention to assist underground personnel during this emergency, while admirable, is exactly the type of conduct that the [Federal Mine Safety and Health Act of 1977] and the secretary's regulations are intended to address and avoid," wrote the commission majority. "The moments after a mining accident are difficult and frantic, but crucial to an effective response is strict adherence to an operator's emergency plan and to the relevant MSHA standards governing conduct after an accident occurs."

MSHA Implements UBB Correctives On Time After Groundbreaking Internal Review

U.S. Mine Safety and Health Administration (MSHA) officials have announced the completion of one of the most comprehensive internal

reviews in agency history, after addressing 100 recommendations following the April 2010 Upper Big Branch (UBB) mine disaster.

That deadline-driven report analyzed MSHA actions in the months preceding the explosion, which killed 29 miners, injured two and led to sweeping mine safety changes industry-wide.

"The review was designed to identify shortcomings so that we could take actions to improve mine safety and health," said Joseph A. Main, assistant secretary of labor for mine safety and health. "The result was one of the most extensive improvements at the agency in decades."

In June 2012, MSHA officials began posting quarterly updates on their website of completed corrective actions. The MSHA, however, implemented administrative, organizational and regulatory reforms in the immediate aftermath ahead of survey results.

Reforms included enhanced enforcement programs, including impact inspections and a revised pattern of violations process; the splitting of the southern West Virginia coal district into two districts; and the upgrading of the Mount Hope, W.Va., laboratory for better coal dust and gas analyses.

Additional measures included reorganization of the MSHA Office of Assessments, Accountability, Special Enforcement and Investigations to better manage and support enforcement, and the publication of final regulations of rock dust maintenance, examinations in underground mines and a program aimed at chronic violators.

"Meeting self-imposed timelines was a major challenge," added Main, noting other demands facing the agency, including mission-critical needs, sequestration and the 16-day government shutdown. "MSHA was able to maintain schedule throughout the process and finish actions on time — a testament to the hard work and dedication of our employees."

Other corrective actions included revisions or developments affecting more than 40 policy directives, mine inspection procedure handbooks and a new coal roof control handbook. More than 20 MSHA training sessions were also addressed, including a new centralized system to improve oversight across agency directives and consistency guidance.

Further new measures included a modification of the Mine Plan Approval database system and the integration of a common tracking system for inspector re-training and creation, with the Holmes Safety Association and mining community, of a national mine rescue organization.

"The Upper Big Branch tragedy shook the very foundation of mine safety," added Main. "It caused us to re-double efforts to instill a culture of prevention in mining. These actions are part of MSHA's efforts to improve conditions so miners can go to work, do their jobs and return to their loved ones safe and healthy at the end of every shift."

Following the event, MSHA and mining community initiatives have led to fewer mines with chronic violations, record reductions in temporary reinstatements and discrimination case filings, and a reduction of breathable dust to lowest exposure levels in history. Other breakthroughs have included lowest fatal and injury rates in 2011 and again in 2012 and lowest fatal and injury rates and number of mining deaths ever recorded in a fiscal year.

A list of MSHA's corrective actions can be found on the Upper Big Branch single source page at: www.msha.gov/PerformanceCoal/UBBInternalReview/UBBCorrectiveActions.asp.



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