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The Magazine for Coal Mining and Processing Professionals

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US Longwall Census 2021

— COVID-19 affects 2020 production,
but the fleet remains intact

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This month, Coal Age provides an in-depth report on longwall mining in the U.S. with its annual U.S. Longwall Census. On the cover, a view down the face of America's longest longwall panel. (Photo courtesy of Signal Peak Energy)

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LOOKING FORWARD TO A HEALTHY 2021



BY STEVE FISCOR
PUBLISHER &
EDITOR-IN-CHIEF

Many coal companies and other sources are reporting their final 2020 coal production figures. Readers will note these figures throughout this edition of *Coal Age*. For the most part, the declines in coal production range from 10% to 25%. Considering that many of the businesses that were able to survive the 2020 COVID-19 lockdowns saw their revenues drop anywhere from 10% to 30%, the coal production losses seem to fall in line with what happened to other industrial sectors. As always, there are exceptions. Coal production in China and India continued to grow, albeit at a slower pace.

For perspective, according to the *Xinhua* news agency, China was expected to produce 3.84 billion metric tons (mt) in 2020, an increase of 90 million mt over 2019 or 2.4%, and it imported 304 million mt in 2020, which was a 4-million-mt increase (1.3%). India's 2020 coal production, according to Iman Resources, grew to 727 million mt, a 7-million-mt increase (1%) over 2019, while its imports dropped 12% from 231 million mt in 2019 to 204 million mt in 2020.

The decline in U.S. production was more substantial. While the final figures were not yet available from the U.S. Energy Information Administration as this edition was going to press, the latest figures indicated that total U.S. production had dropped 23.7% from 708 million tons in 2019 to 540 million tons in 2020. Those figures are equivalent to 644 million mt and 491 million mt, respectively, for 2019 and 2020.

Australia reports its coal export statistics on a fiscal year (FY) basis. For FY2019-2020, coal exports totaled 390 million mt, which were broken out as 213 million mt of thermal coal and 177 million mt of metallurgical coal. For FY2020-2021, and prior to the recent dust up with China, the Australian government was predicting 368 million mt, a 6% decrease, which broke out as 158 million mt of thermal coal and 46 million mt of met coal. Late last year, a trade dispute erupted between China and Australia that affected many of the goods China imports from Australia, including coal, but not iron ore. China can and has now purchased more coal from other regions, such as Russia, Indonesia and Canada, which has caused a significant market shift in the Australian-Pacific coal market. More details are offered in the Coking Coals article (See p. 30).

Many coal companies are already discussing the recovery they expect in 2021. As this edition was going to press, Alliance Resource Partners reported its fourth quarter earnings and offered some market optimism (See Leading Developments, p. 5). Readers can also read some positive market developments in the U.S. Longwall Census (See p. 14) and the Coking Coal report. Readers should not mistake this guarded optimism for a full-blown recovery. That will only happen when demand for electricity and steel begin to grow again in earnest, but market indicators are looking better for 2021.

Steve Fiscor, Publisher & Editor-in-Chief
sfiscor@mining-media.com



Mining Media International, Inc.
11655 Central Parkway, Suite 306
Jacksonville, Florida 32224 U.S.A.
Phone: +1.904.721.2925
Fax: +1.904.721.2930

Editorial

Publisher & Editor-in-Chief—Steve Fiscor, sfiscor@mining-media.com
Associate Editor—Jennifer Jensen, jjensen@mining-media.com
Technical Writer—Jesse Morton, jmorton@mining-media.com
Contributing Editor—Russ Carter, rcarter@mining-media.com
European Editor—Carly Leonida, cleonida@mining-media.com
Latin American Editor—Oscar Martinez, omartinez@mining-media.com
Graphic Designer—Tad Seabrook, tseabrook@mining-media.com

Sales

Midwest/Eastern U.S. & Canada, Sales—Craig Scharf, cscharf@mining-media.com
Western U.S., Canada & Australia—Frank Strazzulla, fstrazzulla@mining-media.com
Scandinavia, UK and European Sales—Colm Barry, colm.barry@womp-int.com
Germany, Austria & Switzerland Sales—Gerd Strasmann, info@strasmann-media.de
Japan Sales—Masao Ishiguro, ma.ishiguro@w9.dion.ne.jp
General Manager-Operations—Dan Fitts, dfitts@mining-media.com
Marketing Manager—Misty Valverde, mvalverde@mining-media.com



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COURT STRIKES DOWN AFFORDABLE CLEAN ENERGY RULE

On January 19, a D.C. Federal Appeals Court vacated then-President Donald Trump administration's Affordable Clean Energy (ACE) Rule. The rule, which established emissions guidelines for states to use for coal-fired plants, replaced the Clean Power Plan and was finalized in June 2019. The ACE rule gave states more time and authority when deciding how to ease emissions from coal plants.

In the decision, the court said, "promulgation of the ACE Rule and its embedded repeal of the Clean Power Plan rested critically on a mistaken reading of the Clean Air Act." It also vacated the amendments to implementing regulations that extended the compliance timeline.

It said the U.S. Environmental Protection Agency (EPA) "fundamentally has misconceived the law" and that it could not stand.

Coal petitioners, North American Coal Corp. and Westmoreland Mining Holdings LLC, brought forward two challenges to the ACE Rule. Both questioned the EPA's legal authority to enact the rule.

They argued that the EPA failed to make the required endangerment finding — that carbon dioxide emissions from power plants cause or contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare — before regulating those emissions. The court said the EPA made the finding in 2015 and the ACE Rule retained that finding.

The coal companies also argued that the EPA's previous regulation of a different air pollutant (mercury) from power plants under the Hazardous Air Pollutants provision precludes the EPA from now regulating power plants' emission of greenhouse gases under Section 7411(d).

The court determined the EPA "correctly and consistently" read the statute to allow the regulation of a source's emission of hazardous substances under Section 7412 and other pollutants emitted by the same source under Section 7411(d).

"The coal petitioners' argument rests not on the enacted statutory language, but instead on their own favored reading of one statutory amendment inserted by codifiers," the court ruling said.

It added that if read as a whole, including all relevant language enacted by Congress and two duly enacted amendments, "the Clean Air Act authorizes the EPA to regulate both power plants' emissions of greenhouse gases under Section 7411(d) and hazardous air pollutants under Section 7412. That reading is reinforced by the statutory structure, purpose and history."

The Clean Power Plan faced numerous legal challenges questioning the EPA's authority to enact the reg-

ulations. In 2016, the U.S. Supreme Court issued a stay halting the implementation of the plan while the case was heard in lower courts. The case was still ongoing in the D.C. Circuit Court of Appeals when the EPA began to repeal the plan.

Drummond Coal Production, Exports Drop in 2020

Drummond Ltd. finished 2020 with a production of 29.28 million tons of coal and 29.72 million tons exported. Even though this was a decrease from 2019 levels, the company was still the largest producer and exporter of coal in Colombia.

The company's production and export levels dropped compared to 2019, with a reduction of 10.3% in the tons of coal produced and 4.4% in those exported, due to a prolonged cycle of low prices in the international coal market, and a forced reduction in operations at the beginning of the health crisis, the company said.



Drummond, the largest Colombian coal exporter, sees production drop 10% in 2020.

The initial focus in March 2020 was to implement its biosecurity protocols, based on the recommendations of the World Health Organization and the Ministry of Health, to face the COVID-19 pandemic and protect the health of employees, their families and the communities in their area of influence, the company said.

“We acknowledge that it was not an easy year,” President José Miguel Linares said. “We overcame serious challenges in the face of a low-priced coal market and a sanitation crisis that hit the whole world.”

During 2020, Drummond’s coal reached more than 24 countries, including Turkey, South Korea, Brazil, the United States, Chile, Israel, Puerto Rico, Mexico, Poland, Asia, the Netherlands and Spain.

Rebound Continues in Q4 2020 for Alliance Resource Partners

Alliance Resource Partners (ARLP) reported improved financial and operating performance for the fourth quarter of 2020 compared to the third quarter. Increased coal sales and oil and gas royalty revenues drove total consolidated revenues higher by 3.1% to \$366.5 million compared to the sequential quarter.

Total revenues in the 2020 quarter were 19.2% lower compared to the fourth quarter of 2019, reflecting the impacts of reduced global energy demand resulting from the coronavirus (COVID-19) pandemic.

ARLP’s performance and results for 2020 were also impacted by the effects of pandemic-related disruptions. Compared to the prior year, total revenues for 2020 decreased 32.3% to \$1.33 billion.

“I am extremely proud of ARLP’s performance and accomplishments during the unprecedented turmoil we experienced in 2020,” Chairman, President and CEO Joe Craft said. “Amid the uncertainties created by the COVID-19 pandemic, ARLP’s operating teams performed heroically

to ensure that our essential coal production remained available to our customers to protect the reliability of the life-sustaining, critical infrastructure of the electric grid supporting the communities we serve.”

The coal operations adjusted production in response to circumstances while the company said it implemented safety and health protocols to mitigate the impact of the virus.

“Despite the disruptions encountered during the year, through their decisive actions, our coal mining operations delivered the best safety results in ARLP’s history,” Craft said.

Looking forward, Craft said the company sees a bright future. “We’re in the energy business and we still believe strongly in coal, oil and gas,” he added.

He said it is unrealistic to think the U.S. would be fossil neutral by 2035. This will not happen overnight and is more “sound bites” than a vision of reaching that goal, he added.

He added that solar and wind only accounted for 3% of power generation in 2019.

ARLP’s coal sales volumes increased in both the Illinois Basin and Appalachian regions compared to the third quarter, leading total coal sales volumes in the 2020 quarter higher by 4.8% to 8.1 million tons.

Illinois Basin coal sales volumes increased 5.2% on higher volumes at Hamilton and Warrior mines compared to the third quarter.

In Appalachia, coal sales volumes increased 4.1% compared to the sequential quarter primarily due to higher sales from the MC Mining operation, which completed development of its new mine midway through the third quarter. Compared to the fourth quarter of 2019, total coal sales volumes decreased 14.4% in the fourth quarter of 2020.

“Entering 2021, we are encouraged by hopes for gradually improving economic recovery as the rollout of vaccines continues,” Craft said. “Increased economic activity in the U.S. is expected to result in improved energy demand and both our coal and minerals segments should benefit if this occurs. Increased power generation and a favorable natural gas price curve has coal consumption poised for a potential rebound.”

The company booked commitments for the delivery of approximately 9.9 million tons through 2025.

ARLP currently has contract commitments for approximately 24.1 million tons in 2021 and is targeting total coal sales volumes this year approximately 10% above 2020 levels.

ALBERTA CANCELS 11 COAL LEASES IN ROCKY MOUNTAINS

Following public opposition, Alberta Minister of Energy Sonya Savage has made the decision to cancel 11 recently issued coal leases and pause any future coal lease sales in former Category 2 lands. The decision will reverse previous government plans to expand coal mining in the Rocky Mountains.

“We have listened carefully to the concerns raised in recent days, and thank those who spoke up with passion,” Savage said.

The coal leases from the December 2020 auction will be canceled. The decision does not impact existing coal projects currently under regulatory reviews.

Savage pointed out that coal leases do not allow for exploration, development or production without a comprehensive regulatory review.

“A lease holder has no more right to set foot on lease property than any other Albertan,” Savage said. “The same rules apply now, as before.”

This pause will allow the government to “ensure that the interests of Albertans, as owners of mineral resources, are protected.

Coal development is an important part of the economy, but must be done responsibly, she added.

COAL MINE DEATHS REACH HISTORIC LOW IN 2020

U.S. mine-related deaths fall below 30 for 2020

In 2020, the U.S. Department of Labor's Mine Safety and Health Administration (MSHA) reported there were 29 mining fatalities, making it the sixth consecutive year that mining fatalities were below 30. Among those fatalities, five occurred in coal mines, a historic low.

According to MSHA, three deaths occurred in Kentucky and Louisiana; two each in Arizona, California, Georgia, Iowa, Texas and West Virginia; and one each in Colorado, Illinois, Kansas, Michigan, Missouri, Nevada, New Jersey, Ohio, Pennsylvania, South Carolina and Washington.

After a two-year increase in 2017 and 2018 when about half of all deaths resulted from powered-haulage accidents, such as vehicle-on-vehicle collisions, failure to use a functioning seat belt, and conveyor belt accidents, MSHA responded with a multifaceted education campaign and initiated rulemaking.

By 2020, powered-haulage deaths dropped to 21%. Last year also marked the first year in MSHA's history with no seatbelt-related deaths, and conveyor-related deaths dropped from four in 2017 to one in 2020.

"In 2020, the U.S. Department of Labor's MSHA focused on improving safety in several areas, including falls from height and truck-loading operations," Assistant Secretary for Mine Safety and Health David G. Zatezalo said. "We also focused on chronic problem areas, such as disproportionate accidents among contractors and inexperienced miners."

According to Zatezalo, contractor deaths for 2020 accounted for 28%, down from 41% in 2019.

As required, MSHA inspected all underground mines at least four times per year and surface mines at least twice per year in 2020, in a year when 15% of inspectors self-identified as high-risk for the coronavirus under the Centers for Disease Control (CDC) guidelines. Between March 1, 2020, and December 31, 2020, MSHA issued 195 citations for sanitary conditions that could have contributed to the coronavirus.

The mining industry achieved its highest compliance with MSHA's health standards, which protect the long-term health of miners. Last year saw all-time low-average concentra-

tions of respirable dust and respirable quartz in underground coal mines, as well as exposure to dust and quartz for miners at highest risk of overexposure to respirable dust.

Approximately 230,000 miners work across 11,500 metal/nonmetal mines in the U.S., while 64,000 work in the nation's 1,000 coal mines.

Court Rules in Favor of Riverview Energy in Air Permit Challenge

Riverview Energy Corp. received good news when an Indiana court denied a petition by local opposition groups Southwestern Indiana Citizens for Quality of Life and Valley Watch Inc. to block Riverview's Title V air permit.

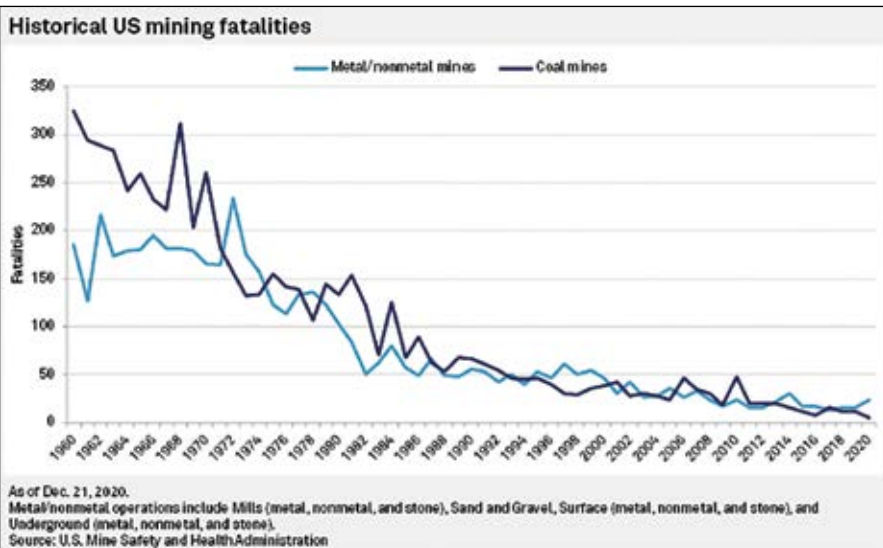
"We are pleased with the court's decision, of course, and had full confidence in the regulatory diligence that the Indiana Department of Environmental Management applied in vetting and issuing our air permit," Riverview Energy President Gregory Merle said.

The Indiana Office of Environmental Adjudication denied the petition on all counts cited in the legal challenge.

"It was a full victory on this front, and our next steps are to move forward with the development phase," Merle said. "That will be a victory for the people of Spencer County, Indiana, and the region."

The U.S. Environmental Protection Agency also denied a similar petition from the same two local opposition groups last spring. That denial went unchallenged as of the deadline to appeal in August 2020.

Riverview Energy said it is on track to contribute significantly to the green-hydrogen economy as the first U.S. direct coal-hydrogenation refinery, which will produce ultra-low-sulfur diesel (ULSD) that is 30% cleaner than the ULSD standard. The Dale, In-



While one fatality is one too many, the U.S. coal industry experienced five fatalities last year.

diana, plant will be the first greenfield refinery permitted in almost 50 years.

The Riverview Energy plant will use a Nobel Prize winning process that Russia and China are already using. With the direct coal-hydrogenation process, coal particles are processed via a carbon-free method that does not burn or gasify the coal. From there, the particles are hydrogenated in a closed system at high pressure and temperature.

“The plant will have a significantly lower carbon footprint than other technologies, and nothing will go to waste,” Merle said. “All the plant’s products will be marketable — and with stricter federal regulations in auto fuel efficiency and now in global marine shipping, the market is prime for this innovative process that uses the U.S.’s vast coal resources in a highly clean process.”

Merle said the Dale plant is just the starting point for Riverview Energy’s operations. The company plans to build more plants in the future and make the coal-hydrogenation process a valuable part of the U.S. energy independence mix.

Contura Energy Changes Name to Alpha Metallurgical Resources

Coal producer Contura Energy Inc. decided to change its name, effective February 1, to Alpha Metallurgical Resources Inc. The company has been shifting its focus away from thermal coal to the metallurgical coal side of the business. It recently divested its Cumberland mine in Pennsylvania to mark its exit from the thermal side.

The company’s stock, which traded on the New York Stock Exchange under the CTRA ticker symbol, will now trade as AMR.

American Resources Signs Technology License With Penn State

American Resources Corp. has entered into exclusive patent and technology licensing agreements and sponsored research agreements with Penn State University and its Department of En-

ergy and Mineral Engineering to implement Penn State’s intellectual property and technologies that separate and extract preconcentrate critical and rare earth minerals from the company’s carbon-based resources. American Resources will execute Penn State’s technologies and processes through a combination of utilizing mineral pro-

cessing technologies at the company’s existing processing infrastructure and extraction from the company’s currently controlled acid mine drainage (or AMD) and coarse refuse sources.

American Resources will retrofit and enhance its existing carbon pro-

— U.S. News Continued on Page 10 —

MONTHLY STATS FROM COAL COUNTRY — USA

TOP 10 COAL-PRODUCING STATES AND REGIONS

	(Thousands of Short Tons)		Week Ending (1/23/21)
	YTD '21	YTD '20	% Change
Wyoming	14,920	16,357	-8.8
West Virginia	4,304	5,034	-14.5
Pennsylvania	2,370	3,085	-23.2
North Dakota	2,147	1,991	7.8
Illinois	1,982	2,489	-20.4
Montana	1,825	2,157	-15.4
Kentucky	1,430	1,993	-28.2
Indiana	1,269	1,634	-22.3
Texas	1,254	1,392	-9.9
Utah	970	976	-0.6
Appalachian Total	9,039	10,995	-17.8
Interior Total	5,755	7,136	-19.3
Western Total	21,322	23,166	-8.0
U.S. Total	36,117	41,298	-12.5

WEEKLY SPOT PRICES

	(\$/ton)	Week Ending	
		(1/1/21)	(1/22/21)
Central Appalachia	(12,500 Btu, 1.2 SO ₂)	\$54.35	\$54.00
Northern Appalachia	(13,000 Btu, < 3.0 SO ₂)	\$45.15	\$47.25
Illinois Basin	(11,800 Btu, 5.0 SO ₂)	\$34.10	\$34.25
Powder River Basin	(8,800 Btu, 0.8 SO ₂)	\$11.55	\$11.35
Uinta Basin	(11,700 Btu, 0.8 SO ₂)	\$29.85	\$31.25

Source: Energy Information Administration

NSW APPROVES MAXWELL UNDERGROUND PROJECT



The Maxwell project will rely on existing infrastructure, including the idled Drayton prep plant (above).

The New South Wales Independent Planning Commission (IPC) has approved Malabar Resources' Maxwell Underground Project near Muswellbrook in the New South Wales Upper Hunter.

The determination follows the project's comprehensive and technical review by independent experts and assessment by the NSW Department of Planning, Industry and Environment. In a report in October, it concluded that the Maxwell Underground Project was "in the public interest" and "approvable."

The project also underwent significant community consultation and engagement, including through the public exhibition of the project's Environmental Impact Statement in September 2019 and a public hearing facilitated by the IPC in November 2020.

Chairman Wayne Seabrook said Malabar is eager to begin the next steps to begin construction in 2021.

"Today's news is just the beginning of a much longer journey with our neighbors to ensure the project continues to meet the expectations of everyone in our community, many

of whom we have been speaking with over the last eight years to get this project right," Seabrook said. "The Maxwell Underground Project represents immense potential for the communities of the Upper Hunter."

The project is expected to deliver about 250 construction jobs and 350 jobs during operation, generating \$55 million in annual wages once the project is up and running, according to Seabrook.

"The project will also support local businesses and suppliers over the next three decades, and provide a real boost to the local economy, particularly during this challenging period," he added.

The Maxwell Underground Project will produce high-quality coals with at least 75% capable of being used in the making of steel, according to the company.

Over the initial 26 years, the Maxwell Project will provide \$1 billion to \$1.2 billion in royalties to the New South Wales government and around \$150 million to the local council and state government through, payroll tax, land tax, levies,

council rates and council planning agreement payments.

Vale Takes First Step in Exiting Coal Business

Vale has signed an agreement with Mitsui to purchase its stake in the Moatize coal mine and the Nacala Logistics Corridor (NLC). This is the first step toward Vale's divestment of the coal business. Vale plans to focus on its core businesses and ESG agenda, committed to becoming carbon-neutral by 2050 and reducing 33% of its scopes 1 and 2 emissions by 2030.

Vale will acquire Mitsui's stakes of 15% in the Moatize mine together with 50% in the equity and all other minority credits Mitsui holds on NLC for \$1 each. Mitsui's exit should be completed during 2021.

Upon closing of the transaction, Vale will consolidate NCL entities and all of their assets and liabilities, including the Nacala project finance, which has approximately \$2.5 billion outstanding balance. In doing so, approximately \$300 million per year in operating expenses at the Moatize mine, associated with the Nacala Corridor tariff and which currently impact the coal business EBITDA, will be reclassified to financial expenses, debt amortization, sustaining capital and others, with an equivalent increase in the coal business EBITDA, according to Vale.

Future refinancing and simplification of the structure will lead to potential annual savings of approximately \$25 million, the company added.

Following the acquisition, Vale will begin the process of divesting its participation in the coal business and search for a third party interested in those assets.

Vale said it has been implementing two initiatives that are expected

— *Worldwide News Continued on Page 11* —

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DATELINE WASHINGTON

INCREASINGLY EXPENSIVE, UNRELIABLE AND UNAVAILABLE

BY CONOR BERNSTEIN



Despite ongoing insistence that the fuel security, balance and reliability offered by coal can be easily replaced, mounting evidence points to just the opposite.

In states and grids across the U.S., blackouts, near-misses and troubling warnings have become all too common. California suffered rolling blackouts this summer, Texas has stumbled from one near-miss and capacity crisis to another, and grid operators with territory stretching from the Midwest to New England warn of mounting fuel security crises.

The pivot away from baseload power is creating the same challenges overseas. Britain's grid is dancing with the threat of blackouts and Japan simply can't keep up with demand.

Earlier this winter, Japanese electricity prices soared to all-time highs in the midst of a cold snap and a run on imported LNG, raising fears of blackouts. Power companies begged customers to cut demand as the electricity system hit 99% of its maximum capacity in parts of the country.

Japan's capacity crisis came just two months after it announced its intention to become carbon neutral by 2050. While soaring LNG prices received much of the attention during the crisis, the *Financial Times* reported that solar generation had been particularly low when it was needed most.

Japan's struggle to manage the grid and the shift toward greater reliance on intermittent sources of power is playing out in much the same way on the other side of the world.

Four times this winter, Britain's grid operator has warned that the buffer needed to ensure security of supply and keep the lights on is too small. As *Bloomberg*

reported, "While the U.K. has made swift progress on switching from fossil fuels to renewables, this is the downside... when the wind doesn't blow, cold weather boosts demand and several nuclear plants are offline, the grid operator is left scrambling to avoid blackouts." *Bloomberg's* chief energy correspondent noted what has come to the rescue, writing that the U.K. is using more coal than it has in two years to keep the lights on.

While renewable energy deployment is growing more ambitious, the nations and U.S. states leading the pivot away from fuel-secure baseload generation are struggling.

Germany's struggles with weather-dependent resources and its Energiewende have become the stuff of legend. The dark doldrums, or "dunkelflaute," as the Germans call the periods of uncooperative weather that see solar and wind generation collapse, are a universal problem.

As a California assemblyman said this past summer at a hearing on California's blackouts, "today we have a grid that is increasingly expensive, unreliable and unavailable when the people of California need it the most." He could well have been speaking for the citizens of Texas, the U.K., Japan or Germany.

With economic recovery at the top of the agenda, acknowledging and better valuing the strengths of the energy mix and grid we do have would be a valuable first step in charting a responsible energy path forward that can help underpin recovery, not jeopardize it. Americans want an affordable, no-regrets electricity system. The existing coal fleet continues to play an unheralded but essential role in providing it.

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

— U.S. News Continued from Page 7 —

cessing infrastructure, initially at its Perry County Resources subsidiary, by utilizing Penn State's process circuitry design. The process circuitry enables selective segregation of pyritic material from its carbon waste created during the beneficiation process and will be then utilized in its critical and rare earth processing and stimulation process for producing high-value, rare earth elements and carbon enhancement. By utilizing the technology in the existing carbon processing plant, which Perry County Resources uses to refine its carbon production for the metallurgical markets, the company will have additional benefits to this process as it will result in a higher recovery and product quality while reducing the environmental footprint of a traditional carbon processing plant.

Once this process is proven to be successful at the Perry County Resources processing facility, the company said it will then systematically expand this technology at its other coal processing facilities.

In addition to the pyrite segregation process from Penn State, American Resources will use the exclusive patent pending process to redesign, extract and process the company's various waste stream and coarse refuse sites to produce a concentrate of rare earth and critical elements. This will also result in an ancillary benefit of pulling forward the environmental remediation of long-term treatment sites, thereby accelerating the remediation of many of these sites.

The company started the first series of tests analyzing its raw coal production, settlement ponds, acid mine drainage sites, and processing technologies to determine the designs and specifications that will optimize specific mineral yield. The licensed technologies will be incorporated in American Rare Earth's process chain to enable a low-cost extraction, processing and purification of rare earth oxides.

Worldwide News Continued from Page 8

to produce sustainable results at the Moatize mine: a new mining plan and a new operational strategy for the coal processing plants.

The new mining plan prioritizes ore bodies of better quality and has a better stripping ratio, which is expected to result in a better product mix and cost reduction, according to the company.

The two processing plants will be revitalized and adapted to a new flowsheet, which has been under implementation since November. Once fully executed, Vale expects to resume the ramp-up, reaching a production rate of 15 million metric tons per year (mtpy) in the second half of 2021 and 18 million mtpy in 2022.

Australian Pacific Will Appeal Land and Environment Court Decision

Australian Pacific Coal Ltd. (AQC) plans to appeal the Land and Environment Court of New South Wales' deci-

sion to join the Hunter Thoroughbred Breeders Association's opposition to its plan to modify the development consent for the Dartbrook coal mine in the Hunter Valley. Australian Pacific Coal has proposed extending its mine license until 2027. The company expects the appeal to be heard in the first half of 2021.

AQC has begun a strategic review of the proposed coal mining operations at Dartbrook and associated assets, including freehold land and any water rights. The review will consider and assess all available options for the company, the Dartbrook Project and shareholders, according to the company. The disposal of non-core mining assets at the Dartbrook Project where it has executed contracts for the sale of land and water rights for approximately \$3.3 million is also possible.

The mine has been mothballed for 14 years and negotiations be-

tween Australian Pacific Coal and the Independent Planning Commission (IPC) have been under way for several years.

In September 2019, the IPC deemed a five-year extension to Dartbrook beyond 2022 was "not in the public interest" due to concerns over air quality, noise, subsidence, groundwater and greenhouse gas emissions.

The IPC then blocked Australian Pacific Coal's modification submission. The company continues to try and move forward with the expansion to achieve its permitted 6 million metric tons per year of coal until December 2027.

Altius Will Appeal Alberta Court Decision

The Alberta Court of Queen's Bench dismissed a claim from Altius Minerals Corp. against both the governments of Canada and Alberta relating

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DEVELOPMENTS TO WATCH

PROFITABLE CO₂ REDUCTION WITH MINIMAL CAPEX

BY FRED PALMER

West Virginia Gov. Jim Justice appeared on *CNBC* in December expressing the view that President Joe Biden will not eliminate the use of coal in the United States because he can't. In the governor's words, "to think that today this nation can do without coal and natural gas, would be blowing our legs off."

Coal plants have closed, and more are scheduled to close between now and 2024. At the same time, potential large price increases and/or scarcity in U.S. natural gas pricing due to reduced drilling, increased domestic and foreign demand and/or severe heat or cold, or both, says the existing coal fleet needs to be preserved to meet electricity demand 24/7 for the well-being of us all. At today's natural gas prices and with drilling using borrowed money a thing of the past, natural gas supply continues to decrease while exports increase. Are we not a frigid winter or hot summer away from double-digit natural gas prices and major reliability problems, like 15 years ago?

We use and rely on electric power every minute of every day and turning the country into California will lead to widespread impact in ways that are truly dangerous to human health and welfare. Keeping the coal plants running is the only way to ensure and protect the pro-people value of universal electrification. Improving the efficiency and environmental footprint of the existing coal fleet is a path to ensure that coal plants remain running.

I have had the good fortune of being introduced to a new company with impressive, transformational technology. The company, Combustion & Emissions Technologies LLC (CET), has developed a catalyst, CETALYST, that when deployed provides a Heat Rate Improvement and CO₂, NO_x, SO_x emissions-profile decrease, thus extending the useful life of our nation's coal fleet.

The CET system will prolong the useful life of any coal plant:

- Negligible capital investment;
- Pays dividends upon deployment, making CO₂ reduction profitable while using coal;
- Increasing efficiency through Heat Rate Improvement 2%-4% for bituminous coal;
- Reducing the coal plant carbon footprint 2%-4% in compliance with the new EPA ACE rule;
- Also reducing coal plant emissions of NO_x, SO_x, and mercury;
- Fly ash beneficiation, turns ash liability into an asset and allows rare earth metal recovery while eliminating ash disposal for an 8% fuel cost savings;
- Initial, proof of concept testing was conducted at the University of North Dakota Institute for Energy Studies;

- Validation testing was conducted at the UND Energy and Environmental Research Center (EERC); and
- CET is currently seeking several facilities to test their catalyst in the field and is offering a significant incentive to prospective partners.

This technology addresses the complex issues of emissions, viability and reliability of our coal plants while enhancing electric reliability. On the imperative of electric reliability, it has to be the very first value for our electric system as recognized by the U.S. Government.

It was the Obama administration that put the electric reliability case this way in a study by the Department of Energy to Congress in January 2017, one of the last acts of the Obama/Biden administration.

"Electricity is essential for supporting and sustaining nearly every sector of the modern economy ranging from industrial output and services to national security... A secure reliable electric power sector is necessary for economic growth, public safety, societal well-being and proper functioning of critical infrastructure, national security defense, lifeline networks transportation communications, water and sewer. Without access to reliable electricity, much of the economy and all electricity-enabled critical infrastructure are at risk. These include our national security and homeland defense network, which depend on electricity to carry out their missions to ensure the safety and prosperity of the American people." (DOE Valuation of Energy Security for the United States – report to Congress, January 2017, p. 97).

It is submitted here that President Biden will maintain these principles and coal will continue as an anchor source of electric supply in key parts of the country. To help him in maintaining available and reliable electric power, the efficiency and emissions profile of all coal plants needs to be improved where they can be. With CET technology ready to go, at a profit, deploying it widespread will help out the country, coal and Biden have a successful next four years and into the future as well.

More specifics on the technology can be found at www.cetalyt.com.

Fred Palmer is a senior fellow for CO₂ policy at the Center for the Study of Carbon Dioxide and Global Change. The group disseminates factual reports and sound commentary on new developments in the worldwide scientific quest to determine the climatic and biological consequences of the ongoing rise in the air's CO₂ content. He is also the head of Saving US Coal and could use your support.



China Coal & Mining Expo 2021

China's 19th International Technology Exchange & Equipment Exhibition on Coal & Mining

Date: **26-29** October, 2021

Venue: New China International Exhibition Center (NCIEC)
Beijing, China

Host:

China National Coal Association

Co-host:

China National Coal Group Corp.

Organizers:

Together Expo Limited
China Coal Consultant International



**Worldwide Enquiries:
Together Expo Limited**

Hong Kong Head Office:
Room A, 16/F, Eastern Commercial Centre,
83 Nam On Street, Shau Kei Wan, Hong Kong
Tel : +852 2881 5889
Fax : +852 2890 2657
Email : info@together-expo.com
marjorie@together-expo.com
katherinelee@together-expo.com

Beijing Office:
Room 12A11, Building A, Kunsha Center, 16 Xinyuanli,
Chaoyang District, Beijing 100027, P.R. China
Tel : +86 10 8451 0286 / 8451 0267
Fax : +86 10 8451 0263
Email : info@together-expo.com.cn
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to regulatory changes that will force the discontinuation of coal-fired electrical generation from the Genesee and other Alberta power plants by 2030. The lawsuit sought \$190 million in damages for actions that Altius said were tantamount to expropriation of its Genesee royalty asset. The suit claimed an unlawful taking of Altius' property and undue interference with its economic interests.

The defendants filed for dismissal of the Altius claim and on January 4, a master of the court granted the application to dismiss the claim without a trial.

Altius said it believes the decision was in error and incorrectly applies the law on taking and constructive expropriation. It said it is entitled to a full hearing before a justice of the court and intends to appeal the decision.

In 2014, the company invested in the royalty from the coal that underpins the integrated Genesee mine and power plant. This investment decision relied upon policies and regulations enacted in 2012 that permitted the Genesee power plant's advanced clean burning technologies to continue to generate electricity from coal under a decommissioning schedule that extended to 2055, the company said. However, following this investment, both Alberta and Canada announced policy and regulatory changes that will cause the power plant to discontinue all coal-fired electrical generation, and the payment of underlying coal royalties, by 2030.

"Altius is a small Canadian company that relied upon a clearly defined policy and regulatory framework to make a major investment," Altius CEO Brian Dalton said. "We then suffered grave damages when these governments changed their policy in a manner that essentially expropriated our future royalty entitlements without compensation."

He added that compensation is reasonable "when it becomes the collateral victim of such policy change."

Capital Power Orders 2 Mitsubishi Power Gas Turbines to Achieve Carbon Neutral Goal

Capital Power has ordered two Mitsubishi Power M501JAC gas turbines to repower its Genesee Units 1 and 2 in Alberta, Canada, from coal to natural gas. The units will combine best-in-class Mitsubishi Power air-cooled combustion turbines and heat recovery steam generators with the existing steam turbine generators. With greater than 64% efficiency, the Genesee units will be the most efficient combined cycle plants in Canada, according to Mitsubishi. The plant will provide 1,360 megawatts (MW) of net capacity, and carbon emissions intensity will decrease by approximately 60% to a level below the Alberta Technology Innovation and Emissions Reduction (TIER) regulation benchmark.

The M501JAC gas turbines are hydrogen-capable to support future decarbonization. They will be able to operate on a mixture of natural gas and up to 30% hydrogen. The units can be converted in the future to operate on 100% hydrogen for zero carbon emissions, enhancing Capital Power's standing as among the cleanest large-scale power generators in Canada, according to the company.

"Capital Power is following a strategy toward a low-carbon future with a target to be net carbon neutral before 2050," Capital Power President and CEO Brian Vaasjo said. "The repowering of Genesee Units 1 and 2 with Mitsubishi Power technology will position the Genesee station to be off coal in 2023, delivering 3.4 megatonnes of annual carbon emission reductions, and will position it for additional carbon emission reductions in the future."

The repowering project timeline calls for the units to operate in natural gas simple cycle mode during construction, allowing the Genesee station to be off coal in 2023, with expected repowering completion of Unit 1 in 2023 and Unit 2 in 2024. The project is expected to employ up to

500 workers during peak construction phases.

President and CEO of Mitsubishi Power Americas Paul Browning said, "Mitsubishi Power is pleased to support Capital Power's repowering project to convert from coal to natural gas, and eventually to hydrogen with zero carbon emissions. The station will become a model for reliability, availability, efficiency and sustainability."

German Hard Coal Imports Could Fall in 2021

In 2021, Germany could see its imports of hard coal drop 18.6% year-on-year to 26.7 million metric tons (mt), according to VDKi, as reported by *Reuters*. The group cited lower usage by steelmakers during the COVID-19 pandemic and price competition with gas and renewables in power generation.

The coal importers group also published preliminary data for the past year. It said imports dropped to 32.8 million mt in 2020, a 24% decline from 2019.

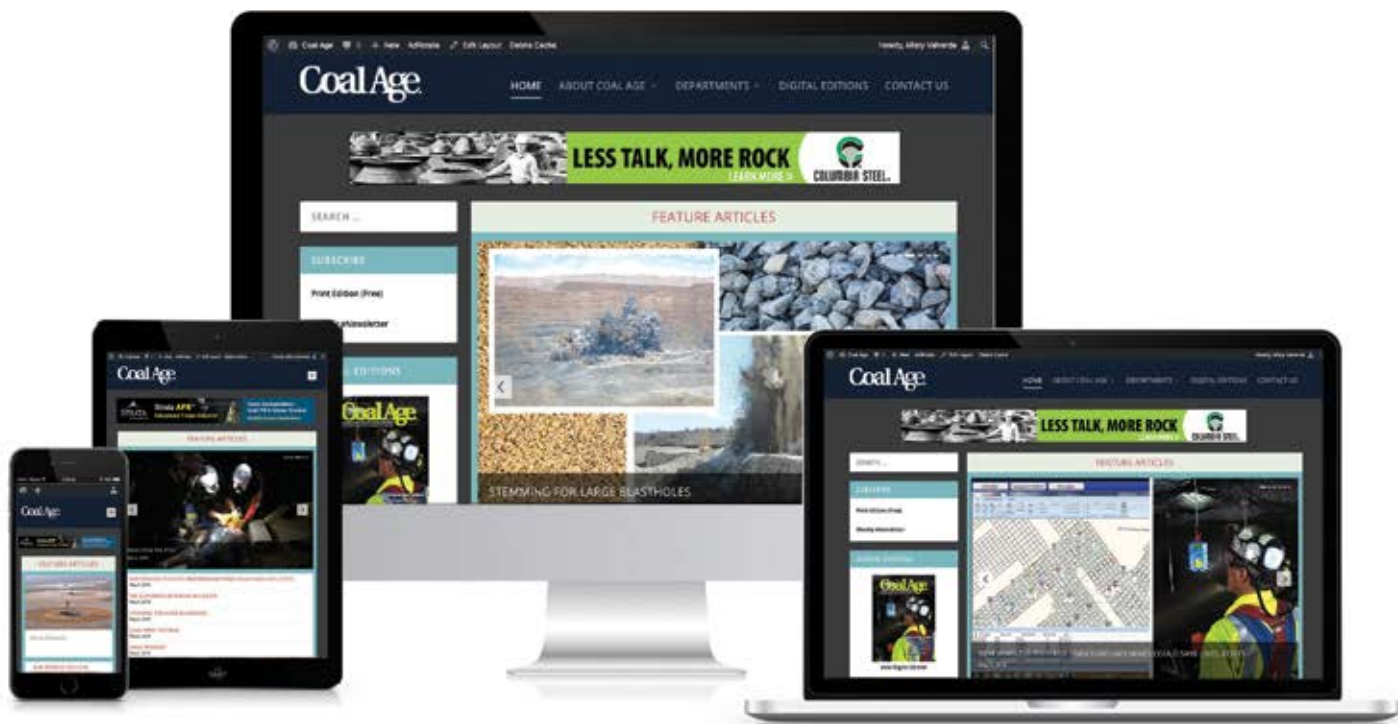
Cerrejon Sees Production, Exports Fall in 2020

Colombian coal miner Cerrejon's production and export levels fell in 2020 due to lower demand, price declines, the impact of the coronavirus pandemic, and a three-month strike that paralyzed operations, as reported by *Reuters*.

The miner produced 12.4 million metric tons (mt) of coal in 2020, down almost 52% from the 25.8 million mt it produced in 2019. Exports fell 48.2% from 26.3 million mt in 2019 to 13.6 million mt in 2020, the lowest level in the last 18 years.

Last year was "one of the most difficult in Cerrejon's history," the company said in a statement, citing reduced activities during a 40-day period while it established biosecurity measures, and the 91-day strike, its longest ever, among other reasons.

The company is owned equally by BHP Group, Anglo American and Glencore.



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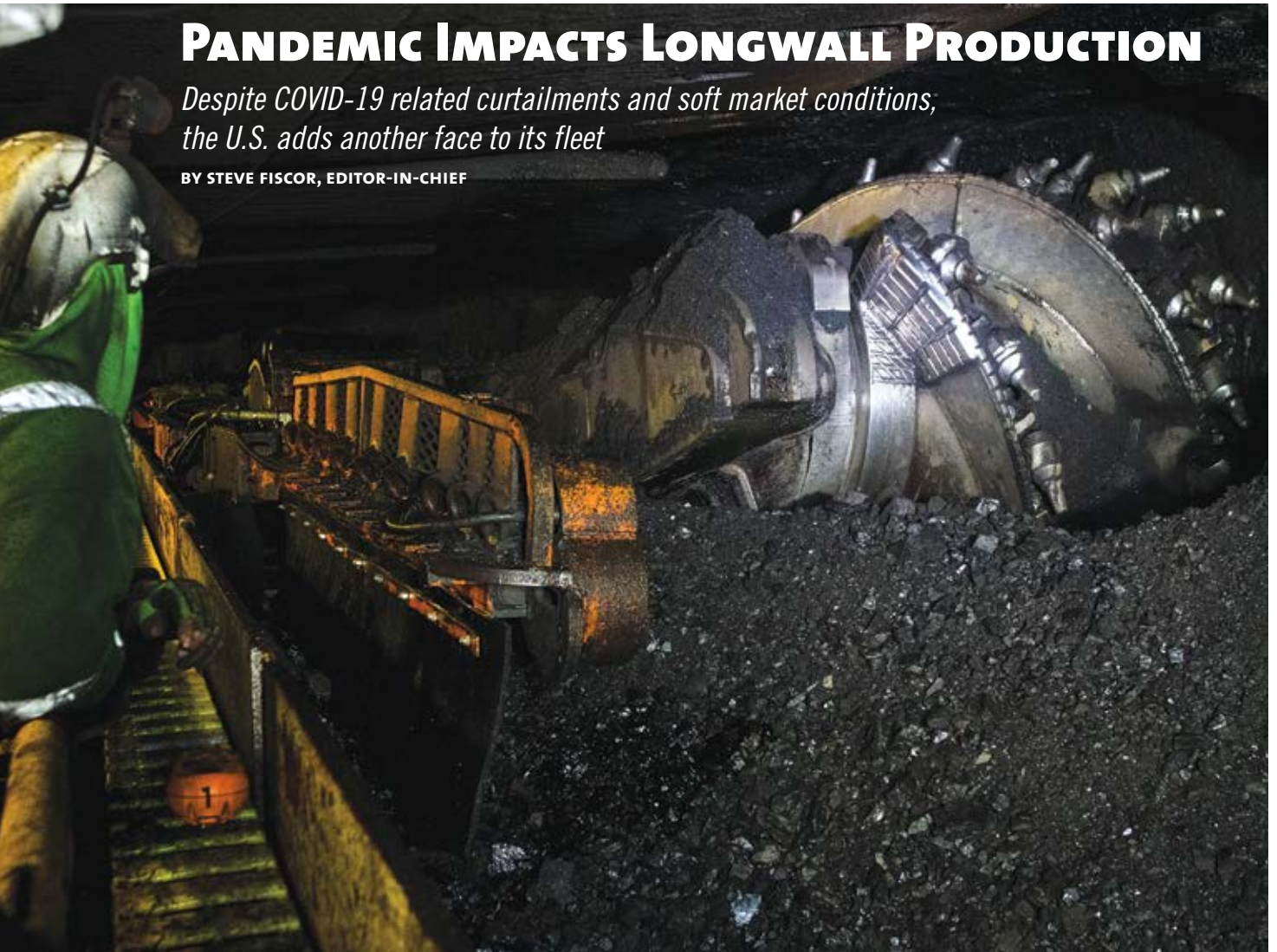
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PANDEMIC IMPACTS LONGWALL PRODUCTION

Despite COVID-19 related curtailments and soft market conditions, the U.S. adds another face to its fleet

BY STEVE FISCOR, EDITOR-IN-CHIEF



A shearer operator cuts coal at CONSOL Energy's Pennsylvania Complex, which operates five longwalls.

In a year that saw total U.S. coal production drop from 708 million tons in 2019 to 540 million tons, it would be foolish to believe U.S. longwall production would be immune to COVID-19. On a percentage basis, the 2020 decline in U.S. longwall production, which dropped 26.2% to 120 million tons from 162.7 million tons in 2019, followed closely with the overall decline in U.S. coal production. Total U.S. coal production fell by 24% in 2020. This is clearly a coal sales problem, not a capacity problem, and the softness in seaborne coal markets last year might explain the two point difference in production figures.

There is, however, some good news to report. The total number of faces grew from 39 to 40 and the total number of longwall mines grew from 34 to 35. Those figures include two trona mines in Wyoming and five mines that operated two longwall faces. One longwall face was added in West Virginia, Arch Coal's Leer South mine, which is expected to begin production during 2021. Foresight Energy began producing from its Deer Run longwall mine in Illinois, which was idled in 2016.

According to the latest statistics from the U.S. Mine Safety and Health Administration, none of the major longwall complexes achieved

more than 10 million tons per year (tpy) during 2020. That has not occurred in at least 10 years. The annual production figures for the top three longwall mines, all of which operate two faces, ranged from nearly 8.9 million tons to nearly 7.2 million tons. Only seven longwall mines produced more than 5 million tpy in 2020. In 2019, 13 longwall installations produced at a capacity of 5 million tpy or greater (See Table 2).

Several new names appear in this year's longwall census. Murray Energy emerged from bankruptcy as American Consolidated Natural Resources (ACNR). Murray Metal-

lurgical, which operates the Oak Grove mine in Alabama, is now Hatfield Metallurgical. Arch Coal changed its name to Arch Resources. Iron Senergy purchased the Cumberland mine in Pennsylvania from Contura Energy.

This year was a difficult year for coal operators. Many were forced to idle operations at different times due to the COVID-19 pandemic. The export market for metallurgical coal also softened. Coronado briefly suspended production at the Buchanan mine. Peabody was forced to suspend production at its Shoal Creek mine in Alabama during the third quarter of 2020 and it remains idle. That market is now recovering. (See Coking Coals, p. 30)

“After an extremely challenging second quarter of 2020, we saw steady improvement in the demand for our coal throughout the third quarter of 2020,” CONSOL Energy President and CEO Jimmy Brock said. “Our sales volumes at the Pennsylvania Mining Complex were nearly double those of the second quarter.” Brock expected to see further improvements for the fourth quarter and into 2021.

When fully operational, Leer South is expected to produce up to 4 million tpy of High-Vol A coking coal. It will operate in tandem with Arch’s flagship Leer mine for the next 20 years or more. “The Arch team continues to maintain great momentum at its world-class Leer South growth project, where development remains on time and on budget,” Arch COO John T. Drexler said.

As of the third quarter of 2020, Arch had invested \$256 million in the \$390 million project. “Leer South is expected to enhance our already high-performing coking coal portfolio across every major metric — boosting our volumes, lowering our average unit cost, enhancing our overall product quality and ex-



Joy says the next major improvement with roof supports will be made with the controls.

panding our profit margins across a wide range of market conditions,” Drexler said. “Moreover, with a gradually improving market outlook heading into 2021, we believe our decision to drive forward with the buildout during the recent market trough could prove highly advantageous as well.”

Industry Demographics

Longwall ownership in the U.S. remained relatively unchanged.

ACNR and the companies it controls (Foresight Energy and Hatfield Metallurgical) operate 13 longwall faces spread across Alabama (1), Illinois (4), Ohio (1), Utah (1) and West Virginia (6). CONSOL Energy operates three mines with five longwall faces in Pennsylvania. Alliance Resource Partners, Arch Resources and Warrior Met Coal own three longwall faces.

With 11 faces, West Virginia remains the longwall leader, followed

Table 1—Longwall Installations by Parent Company (2020-2021)

Company	Ala.	Colo.	Ill.	Mont.	N.M.	Ohio	Pa.	Utah	Va.	W.Va.	Wyo.	Total
Alliance Resource Partners			1							2		3
ACNR						1		1		6		8
Arch Resources		1								2		3
Blue Mountain Energy		1										1
CONSOL Energy							5					5
Iron Senergy							1					1
Coronado Coal									1			1
Foresight Energy (ACNR)			4									4
Hatfield Metallurgical (ACNR)	1											1
Pacific Minerals											1	1
Panther Creek Mining										1		1
Peabody Energy	1	1										2
Signal Peak Energy				1								1
Solvay Chemicals											1	1
Genesis Alkali											1	1
Warrior Met Coal	3											3
Westmoreland Mining					1							1
Wolverine Fuels								2				2
Total	5	3	5	1	1	1	6	3	1	11	3	40

by Pennsylvania (6), Illinois (5) and Alabama (5).

Looking at the numbers, the average U.S. longwall mine operating in coal produced 3.75 million tons in 2020 compared to 5.21 million tons in 2019. On average, it has a cutting height of 95.6 in., a panel width (or face length) of 1,210.1 ft, and a panel length of 12,341.3 ft. Last year, those numbers were 96.4 in., a panel width (or face length) of 1,216 ft, and a panel length of 12,308.2 ft, respectively. A total of eight longwall

faces have face lengths of 1,500 ft or greater. A total of 14 longwalls operate in the Pittsburgh No. 8 seam. The maximum overburden on average reaches 1,045 ft. Except for a few mines in Utah, most are developed with three entry gates. Using an 1,853.1-hp double-drum, ranging-arm shearer, they take a 40.2-in. cut. The average yield setting on the shields is 1,053.3 tons. All of the faces except for three operate at 4,160 volts. CONSOL Energy's Crabapple face at the Bailey mine in

Pennsylvania is the longest: 1,576 ft. Coronado's Buchanan mine is the deepest at 2,000 ft. At 22,500 ft, Signal Peak Energy's Bull Mountains mine in Montana has the longest panel.

Integrating Automated Systems

From a technology standpoint, more U.S. longwall mines are moving toward more automation or what Joy Mining Machinery calls "remote management," explained Shawn Franklin, shearer product manager for Joy. "Long ago, longwalls established themselves as the least manually intensive underground mining method and we're now letting the equipment rely more on the sensors," Franklin said.

Today, more shearers in the U.S. are running with Joy's Advanced Shearer Automation (ASA) and these longwall operators are starting to see the benefits with consistent extraction heights and floor profiles. "The immediate, primary goal with remote management is to keep the operators out of harm's way," Franklin said. "Ultimately, the goal would be to let the equipment run from remote locations even on the surface. Different mines are at different points along that automation journey."

The transition from describing remote operations as remote management reflects the role of the longwall operators, explained Allan Black, roof support product manager for Joy. "Remote operations would imply autonomous operations and that's not really the case," Black said. "These are highly automated longwall mining systems, not autonomous longwalls. The step change we are seeing is leap-frogging from remote management underground, where a remote management center located outby the stageloader or even 300 m outby the maingate [or headgate], to a surface installation. The underground installation has to meet MSHA's regulations regarding intrinsic safety, which limited the technology that could be used."

Table 2—Active US Longwall Mines (February 3, 2021)

U.S. Longwall Mines		Prod. 2020	Prod. 2019	% Change
ACNR	Marshall County*	8,854,604	11,718,744	-24.4
CONSOL Energy	Bailey*	8,668,477	12,218,072	-29.1
Foresight Energy (ACNR)	Sugar Camp*	7,196,444	12,793,896	-43.8
Alliance Resource Partners	Tunnel Ridge	6,756,696	7,330,458	-7.8
Signal Peak Energy	Bull Mountains	6,022,919	7,019,129	-14.2
CONSOL Energy	Enlow Fork*	5,691,381	10,043,384	-43.3
Iron Senergy	Cumberland	5,621,165	6,595,204	-14.8
ACNR	Ohio County	4,998,672	6,600,582	-24.3
ACNR	Harrison County	4,880,471	6,808,868	-28.3
Warrior Met Coal	Blue Creek No. 7	4,463,736	4,921,590	-9.3
Wolverine Fuels	Sufco No. 1	4,458,836	4,373,942	1.9
CONSOL Energy	Harvey	4,410,039	5,023,781	-12.2
Arch Resources	Leer	4,185,123	4,274,748	-2.1
ACNR	Marion County	3,874,919	5,962,845	-35.0
Foresight Energy (ACNR)	Mach Mining	3,841,668	5,174,361	-25.8
Coronado Coal	Buchanan	3,766,386	4,940,159	-23.8
Wolverine Fuels	Skyline	3,687,574	3,916,179	-5.8
ACNR	Lila Canyon	3,301,880	3,713,971	-11.1
Foresight Energy (ACNR)	Deer Run	2,886,225	NA	NA
Alliance Resource Partners	Hamilton County	2,623,205	5,889,105	-55.5
Arch Resources	West Elk	2,538,091	4,079,345	-37.8
Pacific Minerals	Bridger	2,424,369	2,193,565	10.5
ACNR	Monongalia County	2,294,715	4,469,056	-48.7
Blue Mountain Energy	Deserado	1,885,034	2,034,835	-7.4
Alliance Resource Partners	Mountain View	1,834,142	2,075,291	-11.6
ACNR	Century Mine	1,689,296	4,735,046	-64.3
Warrior Met Coal	Blue Creek No. 4	1,638,174	1,734,964	-5.6
Hatfield Metallurgical (ACNR)	Oak Grove	1,608,068	1,364,382	17.9
Westmoreland Mining	San Juan South	1,246,825	3,775,959	-67.0
Peabody Energy	Twentymile	1,192,936	2,543,911	-53.1
Wolf Mining (Arch Coal)	Leer South	NA	NA	NA
Panther Creek Mining	American Eagle	750,953	1,271,954	-41.0
Peabody Energy	Shoal Creek	714,831	1,868,840	-61.8
Total U.S. Longwall Production		120,007,854	162,722,950	-26.2

Note: ACNR - American Consolidated Natural Resources. Source: Mine Safety and Health Administration.

*Each of these mines operate two longwall faces.

Mine Company (parent)	Seam	Seam height (inches)	Cutting height (inches)	Panel width (ft)	Panel length (ft)	Over-burden (ft)	No. of gate entries	Depth of cut (inches)	Shearer Total hp	Haulage system	Roof support yield (tons)	Face conveyor type (strand, motors)	Face conveyor width (mm)/ speed (fpm)	Stageloader type width, speed	Crusher	Electrical controls	Voltage to face
ALABAMA (5)																	
Blue Creek No. 4 Warrior Met Coal	Blue Creek/ Mary Lee	45	85	1,115	4,000-13,000	1,600	4	36	Joy 7LS-ID DDR 1,813	Ultratrac 2000	Joy 1,300	JWR with Cat CSTs 42 TIB 3x1,200	1,000/305	JWR 1,300 mm, 420 fpm	JWR	Line Power	4,160
Blue Creek No. 7 North Blue Creek/ Warrior Met Coal	Blue Creek/ Mary Lee	53	69	1,060	7,000-8,000	1,600	4	36	Joy 7LS-ID DDR 1,813	Ultratrac 2000	Joy 1,150	Joy with Cat CSTs 42 TIB 3x1,000	1,000/305	JWR 1,300 mm, 420 fpm	JWR	Line Power	4,160
Blue Creek No. 7 East Blue Creek/ Warrior Met Coal	Blue Creek/ Mary Lee	53	80	1,040	4,000-13,000	1,600	4	36	Joy 7LS-ID DDR 1,813	Ultratrac 2000	Joy 1,150	Joy with Cat CSTs 42 TIB 3x1,200	1,000/305	JWR 1,300 mm, 420 fpm	JWR	Line Power	4,160
Oak Grove		50-	74	1,088	12,300	785	4	36	Joy 7LS-ID DDR 1,813	Ultratrac 2000	ZMJ NA	Longwall Associates 42 TIB 3x1,000	1,000/384	Joy 1,300 mm, 420 fpm	Longwall Associates	Line Power	4,160
Shoal Creek Peabody Energy	Mary Lee/ Blue Creek	84-132	132	1,000	11,000	1,150	3	42	Joy 7LS5 DDR 2,091	Ultratrac 2000	Joy 955	Cat 48 TIB 3x1,000	1,342/320	Caterpillar 1,424 mm, 385 fpm	Cat	Service Machine	4,160
COLORADO (3)																	
Deserado		84-	132	800	14,000	400-900	3	30	Joy 7LS2 DDR 1,371	Ultratrac 2000	Joy 910	Joy 38 TIB 2x1,072	860/450	Joy 1,220 mm, 410 fpm	Joy	Service Machine	2,300
Twentymile Peabody Energy	Wadge	108	108	1,000	12,000-15,000	1,650	3	39.4	Joy 7LS5 DDR 2,360	Ultratrac 2000	Cat 1,327	Tianming 48 TIB 3x1,900	1,188/371	Caterpillar 1,588 mm, 520 fpm	Cat	Service Machine	4,160
West Elk Arch Resources	E	84-216	156	1,080	10,250-16,000	1,200	3	42	Cat EL2000 DDR 1,970	Jumbotrac	Cat 1,271	Cat 48 TIB 3x1,650	1,188/371	Caterpillar 1,388 mm, 464 fpm	Cat	Service Machine	4,160
ILLINOIS (5)																	
Deer Run Foresight Energy (ACNR) No. 6	Herrin	96	96	1,400	15,000	600	3	42	Joy 7LS5 DDR 2,360	Jumbotrac 2000	Cat 1,200	Cat 52 TIB 3x1,900	1,000/371	Caterpillar 1,388 mm, VFD	Cat	Intermountain Electrical	4,160
Mach No. 1 Foresight Energy (ACNR) No. 6	Herrin	68	84	1,400	18,000	400	3	42	Joy 7LS2A DDR 2,054	Ultratrac 2000	Cat 1,200	Cat 48 TIB 3x2,200	1,000/383	Caterpillar 1,376 mm, VFD	Cat	Intermountain Electrical/SMC	4,160
Sugar Camp M-Class Foresight Energy (ACNR) No. 6	Herrin	72	86	1,400	19,000	900	3	42	Joy 7LS2A DDR 2,054	Ultratrac 2000	Cat 1,200	AEM/Cat 48 TIB 3x2,200	1,000/383	Cat/AEMI 1,376 mm, VFD	Cat	Intermountain Electrical/SMC	4,160
Sugar Camp Viking Foresight Energy (ACNR) No. 6	Herrin	72	86	1,400	19,000	900	3	42	Joy 7LS2A DDR 2,054	Ultratrac 2000	Cat 1,200	AEM/Cat 48 TIB 3x2,200	1,000/383	Cat/AEMI 1,376 mm, VFD	Cat	Intermountain Electrical/SMC	4,160
Hamilton County Coal No. 1 Alliance Resource Partners No. 6	Herrin	76	84	1,400	19,000	1,000	3	42	Joy 7LS1D DDR 1,840	Ultratrac 2,000	Joy 1,320	Joy 50 TIB 3x1,650	1,000/370	Joy 1,350 mm, 480 fpm	Joy	Service Machine	4,160
MONTANA (1)																	
Bull Mountains Signal Peak Energy	Mammoth	180	144	1,250	22,500	450	3	42	Joy 7LS5 DDR 2,360	Super GearRack	Joy 1,130	Longwall Associates 48 TIB 3x1,650	1,088/376	Caterpillar 1,388 mm, 464 fpm	Cat	Intermountain Electrical	4,160

Legend: ACNR—American Consolidated Natural Resources; DDR 2,000 means double-drum ranging arm shearer with 2,000 hp installed; Cutting machines reported are all shearer type unless otherwise indicated. VFD—variable frequency drive; SS—single strand; TIB—twin strand inboard; 42 TIB 2 x 1,000 means 42-mm chain, twin strand inboard; two 1,000-hp motors. *Note: AEMI—American Equipment and Machine Inc.



Average U.S. longwall production drops to 3.75 million tons in 2020 from 5.21 million tons in 2019.

With the surface installation, the operator still fulfills the same role. He starts the shearer, primes the roof supports and starts the armored face conveyor (AFC). He can monitor the performance of the dynamic chain control. He can monitor the cut, ASA and pitch steering. All the information is available to him. He can initiate a production start and monitor its progress.

“After a lot of discussion internally around remote operations, we felt we were almost setting expectations too high compared to where the technology was,” Black said. “An automated system generates repeatable and predictable cuts from the shearer and predictable roof support cycles, but it doesn’t learn from its mistakes. So, you still currently need a certain level of human interaction.”

Someone needs to input the parameters. Take the lower, advance and set cycle (LAS) of a powered roof support as an example, the operators will set the parameters to achieve the optimum speed for the LAS. They know how far the roof

support needs to be lowered. They know where they need to activate the base lift within the advance part of the LAS and how long it takes to set the support. These are currently user definable parameters so the system cannot learn and make changes itself.

“Levels of autonomy will come, but that’s the next generation,” Black said. “Some of the technologies with seam and band recognition are starting to get close.”

When it comes to automated cutting, many people wrongly assume that cutting the tailgate is the most difficult part of the mining sequence. “It’s no secret that the tailgate T junction is the unloved part of the longwall face,” Black said. “If conditions are suitable, no over break with little or no debris in the supports, automating the cutting sequence for the tailgate can be quite simple. It’s actually the easier end to automate provided the conditions are suitable. Automating the cutting sequence for the main gate can have major consequences dealing with

the matilda, BSL alignment and the AF head frame itself when it goes wrong. This process, however, has also been successfully automated.”

New Technology for AFCs and Roof Supports

This spring, Joy will introduce OptiDrive for the AFC. “A constant speed AFC is limited as far as its ability to interact with face automation systems,” said Daniel Sharpe, AFC product manager for Joy Mining Machinery. “The next step for us is the speed control on the AFC, which will allow controlled production. The technology was introduced first in Australia and now at Alliance’s Tunnel Ridge mine in the U.S. This will be a huge achievement for the AFC team.”

The AFC OptiDrive system controls speed and torque via variable frequency drives. This is a step change from other variable frequency drives in the industry through the application of medium-voltage electrical systems (4,160 volts).

“With speed control, we have the ability to reduce chain travel that in

Mine Company (parent)	Seam	Seam height (inches)	Cutting height (inches)	Panel width (ft)	Panel length (ft)	Over-burden (ft)	No. of gate entries	Depth of cut (inches)	Shearer Total hp	Haulage system	Roof support yield (tons)	Face conveyor type (strand, motors)	Face conveyor width (mm)/ speed (fpm)	Stageloader type width, speed	Crusher	Electrical controls	Voltage to face
NEW MEXICO (1)																	
San Juan Mine No. 1 Westmoreland Mining	No. 8	136-200	120-156	1,000	12,500	400-1000	3	39	Joy 7LS5 DDR 2,092	Ultratrac 2000	Joy 1,160	Joy 50 TIB 3x1,150	1,100/350	Joy 1,350 mm, 300 fpm	Joy	Service Machine	4,160
OHIO (1)																	
Century Mine ACNR	Pittsburgh No. 8	59	70	1,500	10,942	400	3	30	Joy 7LS1D DDR 1,880	Ultratrac 2000	AEMI 692	AEMI 48 TIB 3x1,900	1,000/365	AEMI 1,200 mm, 525 fpm	AEMI	MCI	4,160
PENNSYLVANIA (6)																	
Bailey - Dry Ridge CONSOL Energy	Pittsburgh No. 8	62-72	89	1,547	11,950	400-1,000	3	42	Joy 7LS2A DDR 1,666	Ultratrac 2000	Cat 969	Cat/Longwall Associates 48 TIB 3x1,900	988/378	Caterpillar 1,188 mm, 528 fpm	Cat	Line Power	4,160
Bailey - Crabapple CONSOL Energy	Pittsburgh No. 8	62-72	90	1,576	12,300	500-1,400	3	42	Joy 7LS2A DDR 1,666	Ultratrac 2000	Joy 1,005	Cat/PF6 48 TIB 3x1,900	988/378	Caterpillar 1,188 mm, 528 fpm	Cat	Line Power	4,160
Harvey CONSOL Energy	Pittsburgh No. 8	62-72	86	1,541	14,705	800-1,400	3	42	Joy 7LS2A DDR 1,666	Jumbo Track 2000	Cat 969	Cat 48 TIB 3x1,900	988/378	Caterpillar 1,188 mm, 528 fpm	Cat	Line Power	4,160
Cumberland Iron Senery	Pittsburgh No. 8	72-84	96-102	1,388	11,176	600-1,200	3	42	Joy 7LS2A DDR 1,666	Jumbo Track 2000	Cat 1,096	Cat 48 TIB 3x1,900	988/371	Caterpillar 1,388 mm, 420 fpm	Cat	Line Power	4,160
Enlow Fork - F Side CONSOL Energy	Pittsburgh No. 8	67	87	1,540	6,500-9,100	500-700	3	42	Joy 7LS2A DDR 1,666	Super GearRack	Cat 893	Longwall Associates 48 TIB 3x1,900	988/371	Caterpillar 1,188 mm, 525 fpm	Cat	Line Power	4,160
Enlow Fork - G Side CONSOL Energy	Pittsburgh No. 8	60	83	1,493	14,440	600-1,200	3	42	Joy 7LS2A DDR 1,666	Super GearRack	Cat 983	Longwall Associates 48 TIB 3x1,900	988/371	Caterpillar 1,188 mm, 525 fpm	Cat	Line Power	4,160
UTAH (3)																	
SUFCO No. 1 Wolverine Fuels	Upper Hiawatha	84-216	96-156	1,110	2,400-4,000	800-1,800	3	42	Joy 7LS2A DDR 1,940	Ultratrac 2000	Joy 1,100	Joy 48 TIB 3x1,650	1,000/374	Caterpillar 1,388 mm, 464 fpm	Cat	Service Machine	4,160
Skyline Wolverine Fuels	Lower O'Connor A	84-200	96-144	850	6,000	500-1,600	2	36	Joy 7LS2 DDR 1,752	Jumbotrac 2000	Cat 1,007	Cat 42 TIB 2x1,200	1,042/340	Caterpillar 1,388 mm, 450 fpm	Cat	Line Power	4,160
Lila Canyon ACNR	Sunnyside	168	160	850	4,000	1,000	2	42	Cat EL-2,000 DDR 2,004	Ultratrac 2000	ZMJ 1,250	AEMI 48 TIB 3x1,000	1,000/365	AEMI 1,200 mm, 525 fpm	AEMI	Line Power	2,300
VIRGINIA (1)																	
Buchanan Coronado Coal	Pocahontas No. 3	60-76	70	700	11,500	1,400-2,000	4	42	Joy 7LS1D DDR 1,290	Super GearRack 2000	Joy 1,024	Joy/Longwall Associates 42 TIB 3x800	1,000/357	Longwall Associates 1,294 mm, 485 fpm	Joy	Line Power	4,160

Legend: ACNR—American Consolidated Natural Resources; DDR 2,000 means double-drum ranging arm shearer with 2,000 hp installed. Cutting machines reported are all shearer type unless otherwise indicated. VFD—variable frequency drive; SS—single strand; TIB—twin strand inboard; 42 TIB 2 x 1,000 means 42-mm chain, twin strand inboard; two 1,000-hp motors. *Note: AEMI—American Equipment and Machine Inc.

turn reduces chain wear and wear to other associated products.”

“As panels get longer and wider and extended equipment life becomes more critical, fatigue, alongside wear, becomes a major factor,” Sharpe said. “Alongside speed control we are looking at destressing the chain system.”

Sharpe said AFC chain diameters will continue to increase with longer panels and wider faces. “Alongside reduction in chain travel, an

effective way to increase chain life is to utilize Joy Broadband chain, which increases the diameter, contact points and therefore decreases the stress in the chain,” Sharpe said. “With Joy’s Broadband AFC chain, we can place a larger chain in existing AFCs.” He thinks that 60 to 64 Joy Broadband will soon be a reality and supersede the growing number of 56 Joy Broadband systems.

The new major improvement with roof supports will be made with

the controls. “We are currently looking at high-speed data backbones for the in-support controls,” Black said. “That supports the new technology we’re introducing, such as optical cameras, which require additional lighting and a power source. The data backbone would also transmit data from the transducers such as inclinometers mounted on the roof support’s three main structural components (canopy, caving shield and rear links). With real-time data on the geometry of the support, we can determine where the support is and the potential collision hazards. We can also see convergence during long periods of downtime.”

The anti-collision information comes from the inclinometers or tilt transducers and the double-acting rams. “We know the shearer position and size and we can map it in relationship to the roof supports from the previous AFC advance to determine the potential for a collision,” Black said. “Proximity detection will also be an important part of these automated operations. With less people on the face, you need a system to watch over the humans. It goes hand-in-hand with automation.”




Black marvels at the fact that customers anywhere in the world can speak directly with Joy’s design engineers for roof supports in Manchester, England. “We have had several recent contracts for faces in the U.S. and Russia,” Black said. “Video conferencing tools were used for factory acceptance testing while COVID-19 lockdowns prevented travel. Customers were able to sign off on systems remotely.”

Looking toward the future, Franklin said he enjoys helping customers solve problems. Sharpe agreed saying that Joy has a global team looking after more than 100 longwalls worldwide that vary from sophisticated systems in mature markets to new systems in emerging markets.

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Mine Company (parent)	Seam	Seam height (inches)	Cutting height (inches)	Panel width (ft)	Panel length (ft)	Overburden (ft)	No. of gate entries	Depth of cut (inches)	Shearer Total hp	Haulage system	Roof support yield (tons)	Face conveyor type (strand, motors)	Face conveyor width (mm)/ speed (fpm)	Stageloader type width, speed	Crusher	Electrical controls	Voltage to face
WEST VIRGINIA (11)																	
American Eagle ERP Compliant Fuels	Eagle	50	64	1,020	16,200	600-1,000	3	42	Joy 7LS1D DDR 1,625	Super GearRack 2000	Cat 1,271	Cat/LW Associates 48 TIB 3x1,200	988/320	Caterpillar 1,388 mm, 350 fpm	Cat	Service Machine	4,160
Harrison County ACNR	Pittsburgh No. 8	94	90	1,465	4,315	950	3	42	Joy 7LS1D DDR 1,880	Jumbo GearRack Indirect Drive	Cat 862	LW Associates 48 TIB 3x1,900	1,000/365	Caterpillar 1,200 mm, 525 fpm	Cat	Line Power	4,160
Leer Arch Resources	Lower Kittanning	54-96	72-84	5,000-9,000	1,200	320-750	3	42	Joy 7LS1D DDR 1,840	Ultratrac 2000	Joy 1,040	Joy 42 TIB 3x1,000	1,000/337	Joy 1,294 mm, 443 fpm	Joy	Service Machine	4,160
Marion County ACNR	Pittsburgh No. 8	84	90	1,415	7,175	1,000	3	42	Joy 7LS2A DDR 1,854	Ultratrac 2000	Cat 890	AEM/Cat 48 TIB 3x1,900	1,000/365	Caterpillar 1,200 mm, 525 fpm	Cat	Line Power	4,160
Marshall County West ACNR	Pittsburgh No. 8	72	93	1,500	12,000	1,000	3	42	Joy 7LS1A DDR 1,880	Ultratrac 2000	Cat 890	AEMI 48 TIB 3x1,900	1,000/365	Caterpillar 1,200 mm, 525 fpm	Cat	Line Power	4,160
Marshall County East ACNR	Pittsburgh No. 8	72	93	1,500	12,000	1,000	3	42	Joy 7LS2A DDR 1,880	Ultratrac 2000	Cat 1,000	AEMI 48 TIB 3x1,900	1,000/365	AEMI 1,200 mm, 525 fpm	AEMI	MCI	4,160
Monogalia County ACNR	Pittsburgh No. 8	78	96	1,100	11,800	1,000	3	42	Joy 7LS1D DDR 1,880	Ultratrac 2000	ZMJ 840	AEMI 48 TIB 3x1,000	1,000/365	Cat 1,200 mm, 525 fpm	Cat	Line Power	4,160
Mountain View Alliance Resource Partners	Upper Freeport	88-108	78-108	4,000-6,000	850	600	3	42	Joy 7LS1A DDR 1,330	Ultratrac 2000	Joy 815	Longwall Associates 38 TIB 2x700	950/229	Joy 1,200 mm, 312 fpm	Longwall Associates	Line Power	2,300
Ohio County ACNR	Pittsburgh No. 8	66	87	1,406	14,068	650	3	42	Joy 7SL1A DDR 1,880	Ultratrac 2000	Cat 862	AEMI 48 TIB 3x1,900	1,000/365	AEMI 1,300 mm, 525 fpm	AEMI	Line Power	4,160
Tunnel Ridge Alliance Resource Partners	Pittsburgh No. 8	62-72	80-84	17,000-20,000	1,200	400-725	3	42	Joy 7LS1D DDR 1,840	Ultratrac 2000	PSS/CAT 1,020	Joy 48 TIB 3x1,200	1,000/360	Joy 1,294 mm, 443 fpm	Joy	Line Power	4,160
Wolf Run (Leer South) Arch Resources	Lower Kittanning	54-96	72-84	5,000-9,000	1,200	450-900	3	42	Joy 7LS1D DDR 1,840	Ultratrac 2000	Joy 1,040	Joy 42 TIB 3x1,350	1,000/337	Joy 1,294 mm, 443 fpm	Joy	—	4,160
WYOMING (3)																	
Bridger Pacific Minerals	D41	96-144	120	600	10,000	700	3	36	Cat EL 2000 DDR 1,970	Jumbotrac	Cat 982	Cat 42 TIB 2x1,200	988/357	Cat 1,388 mm, 423 fpm	Cat	Service Machine	4,160
Green River Solvay Chemicals	Bed 17	132	132	625	8,750	1,600	3	34	Joy 7LS5 DDR 2,360	Super GearRack 2000	Famur/Cat 800	Longwall Associates 42 TIB 2x1,000	1,100/330	Caterpillar 1,388 mm, 477 fpm	Cat	Service Machine	4,160
Westvaco Genesis Alkali LLC	Bed 17	96-132	96-132	750	9,400	1,500	4	38	Joy 7LS5 DDR 2,360	Ultratrac 2000	Joy 870	Joy 42 TIB 2x1,072	1,100/268	Joy 1,294 mm, 385 fpm	Joy	Service Machine	4,160

Legend: ACNR—American Consolidated Natural Resources; DDR 2,000 means double-drum ranging arm shearer with 2,000 hp installed. Cutting machines reported are all shearer type unless otherwise indicated. VFD—variable frequency drive; SS—single strand; TIB—twin strand inboard; 42 TIB 2 x 1,000 means 42-mm chain, twin strand inboard, two 1,000-hp motors. *Note: AEMI—American Equipment and Machine Inc.

MSHA BEHIND THE NUMBERS

Does the past foretell the future?

BY MARK SAVIT

We have a new administration and, like many in the industry, I have some trepidation about what the future might hold for the Mine Safety and Health Administration's (MSHA) relationship with those it regulates.

But, as Phaedrus is reported to have said, "Things are not always what they seem; the first appearance deceives many; the intelligence of a few perceives what has been carefully hidden." Rather than depending on "the intelligence of the few," we have broken down the numbers from past administrations from 2000 to the present to get a glimpse of what we might expect. That breakdown also unearthed some insight into how MSHA enforcement has affected mine health and safety in the recent past.

Let's start with a bit of background. Don't expect to see a new assistant secretary for mine safety too soon. Dave Lauriski wasn't confirmed until May 2001, five months

after the election. There was a 10-month gap between the end of his term and the beginning of Richard Stickler's term and, although the administration changed parties in 2008, Stickler stayed in office until October 2009 when Joe Main was appointed. Main left office with the change of administrations in January 2017, but current Assistant Secretary Dave Zatezalo wasn't confirmed until November of that year. Also, just in case you thought us miners were getting the short end of the stick for having to wait, I would remind everyone that there was not a confirmed assistant secretary at the Occupational Safety and Health Administration (OSHA) for the entire former President Donald Trump administration. The agency was headed the entire time by Principal Deputy Assistant Secretary Loren Sweatt, who started in July 2017.

As to who the new assistant secretary might be, that's anyone's

guess. Given the amount of time that normally passes between an administration change and the appointment of a new assistant secretary, it's still too early in the game to get a good idea. If the past is any indicator, we can look to two things. First, the assistant secretary has always come from the coal side. As of MSHA's last count (2019), there are slightly more than 10 times as many non-coal mines as there are operating coal mines in the U.S., but there are more inspection days and penalty dollars per coal mine than there are per non-coal mine. Second, 11 of the 29 members of the President Joe Biden transition team for the Department of Labor are either employed by unions or by union affiliated organizations.

Biden's nominee for labor secretary is Marty Walsh. He is currently the mayor of Boston. Before that, he was president of Laborer's Union Local No. 223



and the Boston Metropolitan District Building Trades Council. Both he and Biden have issued statements suggesting that one of their shared goals is increasing union membership and strengthening workers' rights. While that may or may not be significant in and of itself, it should suggest the type of folks that will ultimately form the pool of candidates for MSHA assistant secretary.

Looking at the Numbers

Using software built to support our Predictive Compliance analytical tool along with additional public MSHA data, we did an in-depth analysis of enforcement trends over the last 20 years. We start with a look at the total violation counts from 2000-2019. We've left out 2020, because we're only counting final orders and many of the citations issued in 2020 have yet to be resolved.

We've added the start and end of each assistant secretary for MSHA as benchmarks (See Figure 1). As you can see, there are a number of rises and dips, but overall, total citations remained about even during

“THERE ARE SLIGHTLY MORE THAN 10 TIMES AS MANY NON-COAL MINES AS THERE ARE OPERATING COAL MINES IN THE U.S., THERE ARE MORE INSPECTION DAYS AND PENALTY DOLLARS PER COAL MINE THAN THERE ARE PER NON-COAL MINE.”

Lauriski's tenure, but then begin a fairly steady rise until 2008, then the number starts to steadily decrease starting in 2010. While one might attribute that to a change in administration, a closer look reveals it may be more attributable to serious mine accidents that took place during the period. Here is the same chart with major mine accidents shown on it and coal separated from metal/nonmetal (See Figure 2).

What seems obvious from this view is that the rise in total violation count appears to be driven by the major accident events at coal mines than anything else. However, it is curious to see that the steady decline in coal enforcement actions

between 2008 and 2019 begins almost two years before the Upper Big Branch mine explosion in April 2010, while the decline in metal/nonmetal doesn't start until significantly later, in September 2010.

Of course, there's been about a 9% decline in the total number of mines since 2010. But the number of total violations has declined during the same period by 42% (Figure 3). In other words, the decrease is most likely attributable to something other than the decline in the number of mines.

Broken down by coal and metal/nonmetal, the differences are no less dramatic. The number of coal mines declined by 42% while enforcement



Figure 2 — Monthly violations by industry sector.

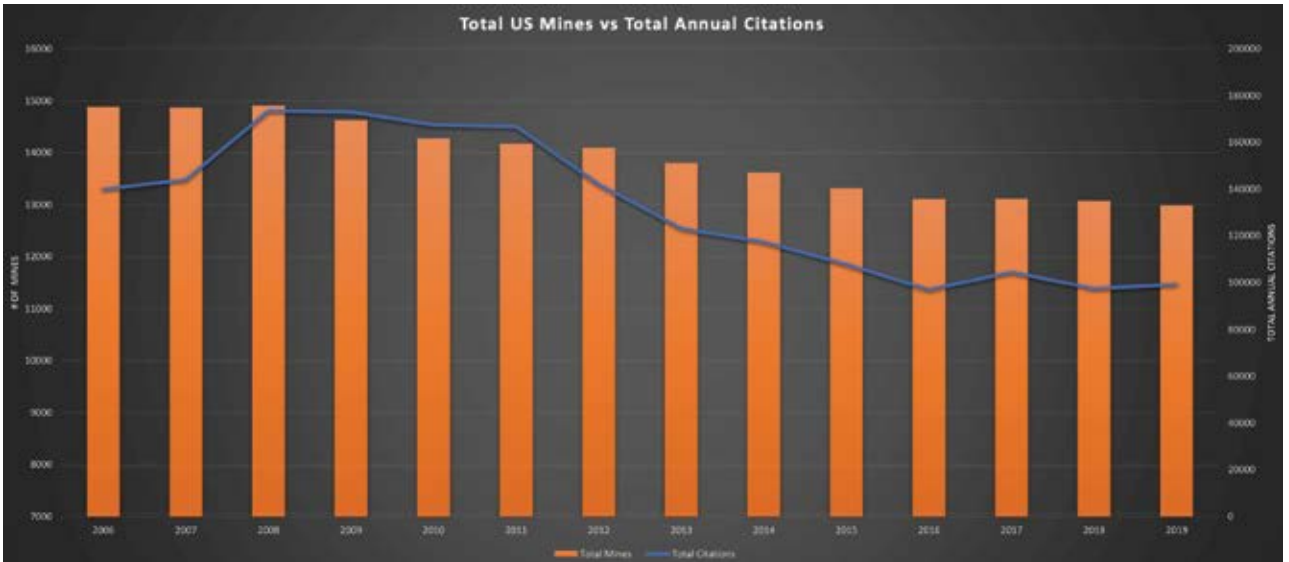


Figure 3 — Number of mines versus total citations.

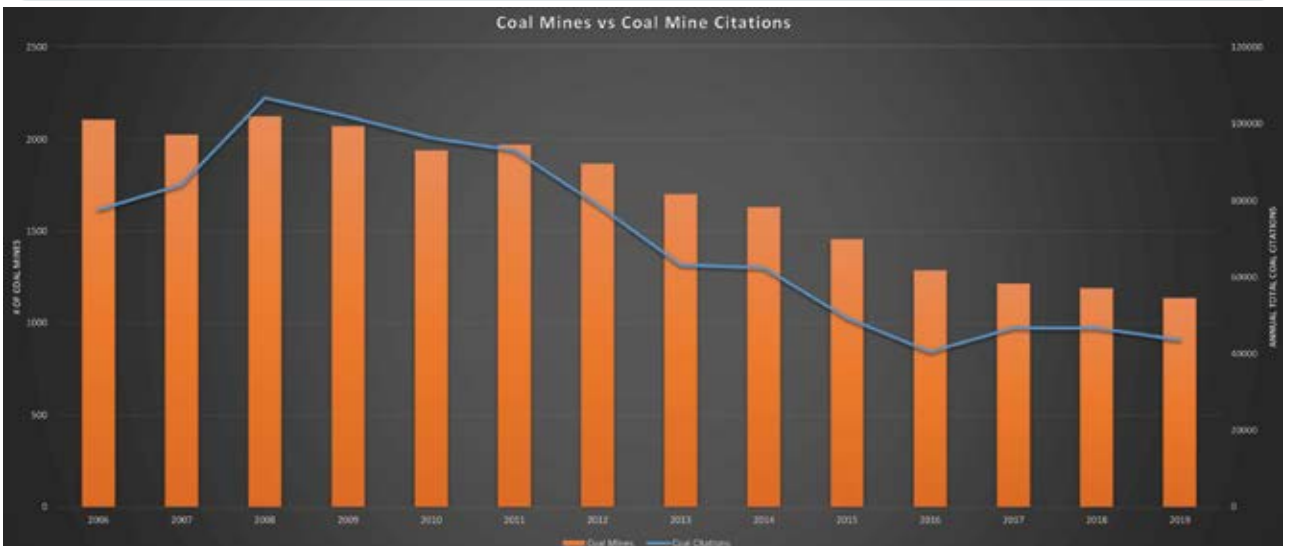


Figure 4 — Coal mines versus coal mine citations.

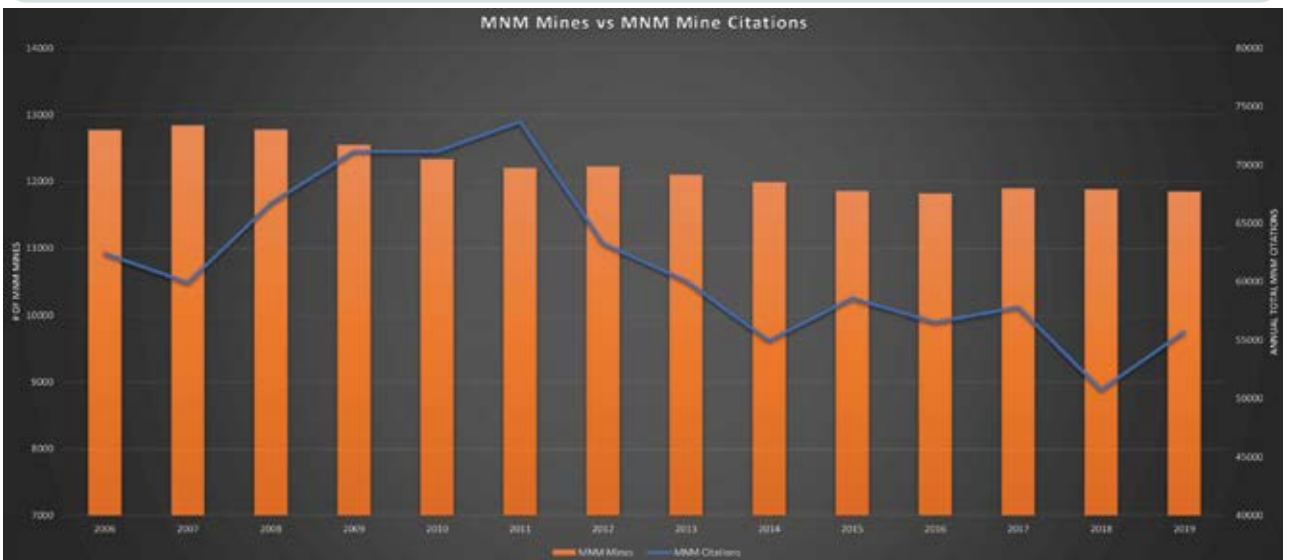


Figure 5 — Metal/nonmetal mines versus metal/nonmetal citations.

actions declined by a little more than 51% (See Figure 4). Similarly, metal/nonmetal mines declined by only 4% while enforcement actions declined by approximately 30% (See Figure 5).

With one notable exception, the number of S&S citations as a percentage of the total has also declined steadily during this period. The best way to illustrate what both the decline and the exception is to show the coal and metal/nonmetal numbers together.

It is worth noting the percentage of significant and substantial (S&S) citations issued to metal/nonmetal mines ran about 10 points below the percentage of S&S citations issued to coal mines until mid-2008, when it started to rise dramatically to almost exactly the same S&S percentage as coal. The charts below demonstrate the rise was unrelated to any significant change in the accident rate or any particular event, but coincides almost exactly with

the change of assistant secretaries from Stickler to Main. The numbers demonstrate that the rise in the S&S percentage for metal/nonmetal mines was triggered by change in administration and a policy decision to bring those percentages closer together (See Figure 6).

Now that we've looked at the enforcement numbers, the inevitable question is whether the rise and/or fall of MSHA enforcement actions has any effect on safety. The next



Figure 6 — Percent of citations that are S&S by sector.



Figure 7 — Days lost versus violation totals by sector.

three charts (Figures 7, 8 and 9) tell the story.

These charts demonstrate a steady drop in days lost starting in 2002, which appears unaffected by any of the rises or falls in MSHA actions. Since the number of miners dropped during the period, we ought to look at the rates to see if the drop in days is attributable to the drop in the number of mines. It is not, and importantly, it is also independent of the various ups and downs in MSHA enforcement actions.

Taken as a whole, these numbers show the improvement in safety in U.S. mines is largely independent of MSHA enforcement trends. One of the key indicators of this is the steadily declining percentage of S&S citations (See Figure 6). Remember that S&S citations are only issued when the alleged violation is reasonably likely to cause an accident and that accident is reasonably expected to result in a serious injury. In other words, the percentage of cita-

tions based on conditions that are not reasonably related to a hazard has risen. It is getting harder and harder for MSHA to find violations that look to be reasonably related to the causes of accidents. The inverse of this S&S percentage decline means the percentage of citations issued for more “technical” violations is rising and the agency appears to be focusing more and more on enforcement for its own sake.

There are several possible reasons for this. I have written about



Figure 8 — Days Lost vs S&S percentage by sector.

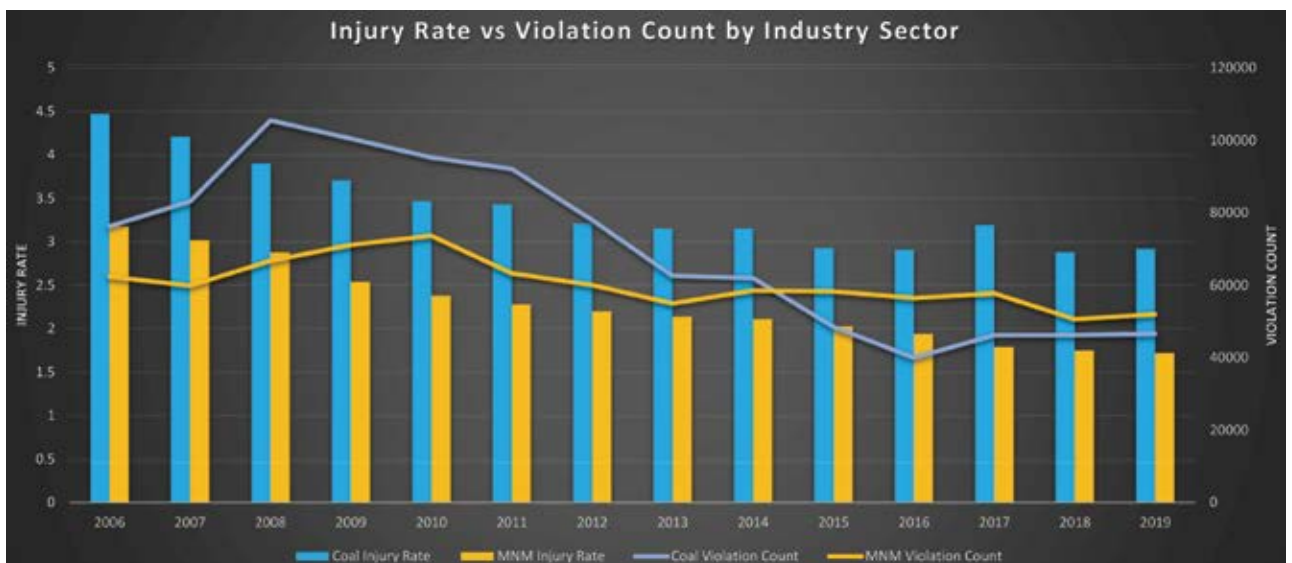


Figure 9 — Injury rate versus violation counts by sector.

many of them over the years and there's neither time nor space for explications of each in this article, but here are two factors that might explain the numbers we just looked at.

1. The 1969 Coal Act, which forms the entire enforcement strategy of the 1977 Act, is based on a labor-management model that is more than 50 years old. No one manages their workforce the same way they did in 1969, and it makes no sense to persist in using that as a basis for our regulatory model.
2. The same is largely true of the regulations. A great deal of them were adopted in the 1970s and 80s from practices developed in the 60s and in some cases the 1940s and even earlier. With limited exceptions, there has been no organized attempt to make the vast majority of regulations relevant to modern methods or technology.

What's MSHA's take on this? It is hard to tell, but one statistic stands out. Let's look at the number of Section 103(k) orders over the same period (See Figure 10). For those of you who might not be familiar with that section of the Act, it allows MSHA to issue orders of withdrawal in the

“IF WE WANT TO GET TO THE PROVERBIAL ‘NEXT LEVEL,’ WE ARE GOING TO HAVE TO DO THINGS DIFFERENTLY.”

case of an accident. Given the decline in total lost days and accident rates, one would logically conclude that the number of Section 103(k) orders would have declined as well. The numbers, however, show otherwise.

After a truly epic boost in the number of orders issued between 2004 and 2011, there were actually more 103(k) orders issued in 2019 than there were in 2000. While this appears to make no sense, there actually might be a logical explanation for it. Under Section 103(k), MSHA can require operators to adopt a plan, which MSHA must approve, before resuming operations. Increasingly, MSHA is using Section 103(k) to require operators to adopt practices that either differ from or go far beyond those required in the regulations. In other words, rather than engaging in an organized, research-based revision of its regulations, MSHA appears to be taking an opportunistic, catch-as-catch-can approach; requiring what it can get away with when the

opportunity arises on a mine-by-mine basis.

There are multiple messages in these numbers. But the overarching conclusion has to be that the Act and the regulations are becoming less and less relevant to the truly remarkable progress we have made to date. If we want to get to the proverbial “next level,” we are going to have to do things differently. My suggestion is that MSHA consider gathering experts from all sectors — industry, labor, government and academia — to fully and frankly discuss collaborative approaches to the goal we all want — greater safety and health for our nation's most valuable resource, the miner.

Mark Savit is president, Predictive Compliance, a software as a service (SaaS) company that assists mining companies with compliance reporting. Prior to this, he was an attorney representing mining companies and resolving regulatory disputes.

www.predictivecompliance.com



Figure 10 — 103k orders versus total lost days.

MET COAL MARKETS EXPECTED TO RECOVER IN 2021

As steel demand approaches pre-COVID-19 levels, the prospects for met coal and coke improve

BY STEVE FISCOR, EDITOR-IN-CHIEF

Like many conference organizers, Smithers decided to host its Met Coke meeting as a webinar in mid-November. The discussion, sponsored by Sun-Coke Energy and promoted by *Coal Age*, took place in the span of a few hours over lunch on November 11.

The theme for the webinar was “The Impacts of COVID-19 and the Steps Toward Recovery.” It began with presentations from Dr. Joseph J. Poveromo, principal, Raw Materials & Ironmaking Global Consulting, who spoke about the factors affecting global economic growth and the met coke market. He was followed by Jim Truman, a metallurgical coal market analyst with Woodmac, who offered an outlook for global markets.

The speakers described how the pandemic impacted the met coal and coke markets worldwide. The situation in the second quarter of 2020 was dire. The disruption in the world economy impacted nearly every market, including steel mills and coal mines. The good news is that the steel market in general will recover much of its losses and regain momentum during 2021 as the economy recovers worldwide.

When one speaks in generalities about this market, however, they are mainly talking about trade between

Australia and Asia, and China in particular. After all, the outsized levels of Chinese demand dictate the direction of the business, especially when it comes to prices, and lately, a trade dispute between Australian met coal suppliers and Chinese steel mills has upset the market fundamentals. It led to a glut of Australian met coal on the seaborne market, which depressed spot prices for certain coals. It also led to new opportunities for other met coal miners as China reached out to other suppliers.

Factors Affecting the Steel Market

Dr. Poveromo compared the COVID-19 pandemic recovery with the recovery from the global financial crisis and said he expects a sharp rebound, instead of the long slog. Citing statistics from CRU, he sees a swift recovery for gross domestic product (GDP) in the U.S. to pre-COVID-19 levels throughout 2021. The Eurozone growth momentum will be a little slower. GDP growth worldwide averaged 2% and 6% for China in 2019. “In 2020, average GDP worldwide contracted 4%, but GDP growth in China still managed to average 2%,” Poveromo said. “For 2021, GDP growth worldwide is expected to average 5% and Chinese GDP growth is expected to be 7%.”

Reviewing statistics from the World Steel Association (WSA), Poveromo explained that worldwide steel demand for 2020 was expected to decline 2.4% to 1.73 billion metric tons (mt). In 2021, worldwide steel demand is expected to grow 4.1% to 1.80 billion mt. Steel demand in the largest market, Asia and Oceania, was expected to grow 2.1% in 2020 to 1.28 billion mt and then grow 2.5% in 2021 to 1.31 billion mt in 2021. Steel demand for North America and the European Union for 2020 was expected to decline 15% to 114.6 million mt and 134.3 million mt, respectively. The WSA forecasts a 6.7% improvement in steel demand for North America in 2021 to 122.2 million mt and an 11% improvement for the EU to 149 million mt.

For the first three quarters of 2020, according to the WSA, global steel production declined 3% to 1.32 billion mt. The 5% growth in China offset the double-digit declines in the EU (-17%), North America (-18%), India (-16%) and Japan (-19%).

Coke Production and Demand

Coke consumption is a function of steel production. “Although figures are not yet available for 2020, in 2019, Smithers estimated that Asian steel mills consumed 460 million mt of coke to produce pig iron,” Poveromo said. “China represented 371 million mt of that figure.” Steel mills in the CIS consumed 32.6 million mt of coke, followed by the EU (29.9 million mt) and South America (10.1 million mt).

Coke is mostly produced and consumed in the same country, Poveromo explained. “Steel mills operate coke plants near the blast furnaces and coke is sometimes transferred to sister plants,” Pomerovo said. “The cross-border coke trade typically only



Metallurgical coal prices enjoy a nice two-year rally until COVID hit.

amounts to about 28 million mt.” The leading met coke exporters are: China (6.9 million mt), Poland (6.2 million mt) and Colombia (3.2 million mt). China is the largest seaborne exporter, while Poland is a major overland exporter.

With a long-standing deficit of domestic coke production, India and Brazil are major coke importers, Poveromo explained. “Malaysia, Vietnam and Indonesia have experienced a rapid growth in blast furnace production, which has not been matched by coke production growth,” Poveromo said.

For 2020, Poveromo expects a sharp drop in global met coke trade to well below 20 million mt. “Some countries formerly importing incremental needs may need little or no outside coke,” Poveromo said. “India, for example, imported 1.6 million mt through September, compared to 3-5 million mt in earlier years. There may be permanent blast furnace shutdowns in the U.S. and Poland. As global steel production picks up, coke inventories will be drawn down before the coke trade picks up again.”

Working with Poveromo, Smithers recently published *The Future of Metallurgical Coke to 2025*, which examines the changing landscape and the impact new technologies will have on the met coke market. Poveromo expects global coke production to recover to pre-2020 levels in 2022 with little change through 2025.

Global Met Coal Market Outlook

Truman described how global met coal markets enjoyed a run of a little more than two years before being shocked in 2020. “Prices tumbled during a horrible second quarter in 2020,” Truman said. “As the third-quarter recovery was developing, China up-ended the market with a ban on Australian coal imports. Then, it strengthened that ban.”

Comparing the prices for Australian low-vol met coals (LV), which have averaged about \$205/mt from January 2016 to end of 2019, with marginal mine costs, it’s apparent



U.S. met coal producers were forced to idle capacity last year. Despite current soft market conditions, coal companies are developing several new HV mines.

that met coal miners were operating at a profit. Prices for U.S. high-vol A met coals (HVA) were also supported above the Australia spot prices.

“Prices fell during the lockdown, then started to improve during September, and then the Chinese ban on Australian imports drove seaborne prices down again,” Truman said.

Early in the pandemic, every met coal producer had some form of closure, which led to a 4.5-million-mt loss through October 2020. Coronado idled its U.S. operations in March 2020 and later in the year, Peabody Energy idled its Shoal Creek operations. “Despite the production losses, three HV longwall mines are currently being developed in the eastern U.S.,” Truman said. “Each could be a 3-million-mtpy longwall operation and could add a sizable amount of HVA production over the next few years.”

U.S. met exports to Europe year-on-year through September fell by 24%, while Australia’s exports fell by 36%. “In a typical year, shipments from Australia and the U.S. to Europe are mirror images, as the EU steelmakers play coal suppliers off of each other,” Truman said.

Australia in general experienced less variation during the first three quarters of 2020, supported by China’s import appetite. During Q3 2020, Queensland’s met exports began to decline and then Australia learned of China’s soft ban on

Australian coal, which caused upheaval in that market. More recently, China has turned to North American coal suppliers, paying a premium.

“We see a 33-million-mt 2020 trade loss in 2020 for the global met coal market and approximately 60% will be earned back by 2022,” Truman said. “Most of that loss is shared by the U.S. and Australia. Australia met exports will drop by about 14 million mt based on demand loss from the Chinese ban and a prolonged outages at Australian mines. U.S. met exports for 2020 will fall 8 million mt.”

The U.S. supply chain remains relatively tight. Since his November presentation, the market has continued to evolve. “The China ban has already lasted longer than we first expected and U.S. producers are getting a delivered price of more \$200/mt to coastal mills. Meanwhile, the ex-China market is still strengthening, which with tight supply, has driven FOB prices north since mid-January. The seaborne spot price is exceeding \$150/mt for U.S. HVA and U.S. LV. So, a lot can happen in a few months.”

“Our long-term story, however, remains unchanged,” Truman said. “The global met coal market will rise to more than 400 million mt by 2040 on Indian growth,” Truman said. “Australia will capture most of the growth, with low costs and its proximity to India.”

DOMINION AWARDS 12-YEAR ASH MARKETING CONTRACT TO CHARAH



The Chesterfield power station (above) has been ordered to remove 15 million yd³ of coal ash.

Charah Solutions Inc. has been awarded a marketing contract by Dominion Energy for the beneficiation and utilization of up to 8.1 million tons of reclaimed ponded coal ash at its Chesterfield Power Station in Chester, Virginia.

Legislation passed during the 2019 Virginia General Assembly requires Dominion Energy to remove approximately 15 million cubic yards (yd³) of coal ash currently stored in two coal ash ponds at Chesterfield Power Station within 15 years. The coal ash must be recycled or placed in a lined landfill that meets federal coal combustion residuals (CCR) and Virginia CCR regulations. To meet the standards mandated in Virginia Senate Bill 1355, Dominion Energy has contracted with Charah Solutions for the coal ash utilization efforts effective 2021 through 2032. Dominion Energy will store the remaining coal ash in an adjacent lined landfill.

As part of the agreement, Charah Solutions will install processing and transportation infrastructure in 2021 to facilitate rail transportation of the ash from Chesterfield Power Station to cement kiln feed markets. The beneficiated ash product will replace other currently utilized virgin raw materials in the production of Portland cement

at multiple cement kiln locations in the eastern U.S. for the next 10-plus years and help supply the growing demand for concrete in the construction industry. In addition, every ton of coal ash used to replace traditional virgin raw materials in the production of cement reduces carbon dioxide emissions entering the atmosphere.

“Charah Solutions is nationally recognized in the power generation industry as a total solutions company, providing unparalleled service and innovation to meet the evolving and increasingly complex needs of our utility partners,” Charah Solutions President and CEO Scott Sewell said. “Many utilities, like Dominion Energy, are experiencing an increased need to retire and decommission older generating assets while improving the environment. We have been proud to partner with Dominion Energy on their sustainability efforts for many years and are delighted to extend our relationship at this site for the next 12 years.”

The beneficiated ash will be distributed through Charah Solutions’ MultiSource materials network, a unique distribution system of more than 40 nationwide locations that provides a continuous and reliable supply of supplementary cementitious ma-

terials for cement and concrete producers as well as other customers who beneficially reuse the products.

Whitmore, Shell Lubricants Form JV to Serve US Mining Customers

Pennzoil-Quaker State, a subsidiary of Shell Oil Co., announced an agreement under which Whitmore Manufacturing, a CSW Industrials subsidiary, will form a 50/50 joint venture (JV) to market, distribute and sell lubricants, grease, coolant, reliability products and related industrial services to the U.S. mining sectors.

The JV, which will be named Shell & Whitmore Reliability Solutions LLC, will combine the strengths of both companies to offer multi-sector expertise equipment technology and an integrated product portfolio for U.S. mining operations (excluding quarries).

“[This] represents a first step toward offering a comprehensive portfolio of products for mining customers,” said Joseph B. Armes, CSW Industrials chairman, president and CEO. “When Shell first approached us about this opportunity to form a partnership, our team quickly realized the value in an expanded commercial relationship with a world-class organization to promote proprietary products and technologies to customers, and increase capacity utilization at Whitmore’s existing manufacturing facility.

“Whitmore and Shell customers are at the heart of the rationale for creating this JV,” said Machtold Hann, president, Shell Lubricants Americas. “The resilient B2B sectors are key pillars for the future of Shell Lubricants, where we see a lot of opportunity for growth to support the market. Partnering with Whitmore, a leading provider of reliability products, high-performance greases and friction modifiers,

in creating this JV helps us progress toward execution of this strategy.”

The JV will be staffed by Whitmore and Shell sales and technical professionals. Its production assets will be co-located at Whitmore’s Rockwall, Texas, facility. The transaction is subject to customary closing conditions and it is expected to commence operations in the first half of 2021.

ATA Becomes Yokohama Off-Highway Tires America

Alliance Tire Americas Inc. (ATA) is now Yokohama Off-Highway Tires America Inc. (YOHTA), the U.S. sales and marketing arm of YOHT. Yokohama Rubber Co. Ltd. created YOHT to consolidate its off-the-road (OTR) tire businesses across the globe with the Alliance, Galaxy and Primex brands it acquired when the company purchased Alliance Tire Group four years ago.

In January, Yokohama Off-Highway Tires released a new corporate identity

and logo, which draws on the 100-plus-year legacy of Yokohama while underlining its own distinct space in the off-highway market segment. The Alliance Tire Group trademark ceased to exist on January 1, globally. The new company combines ATA’s four U.S. warehouses with two Yokohama distribution facilities in Columbus, Ohio, and Auburn, Georgia. YOHTA is based at the existing ATA headquarters in Wakefield, Massachusetts, supported by staff across the country.

Motion Industries Rebrands; Breaks Ground on New Facility

Motion Industries Inc., a distributor of replacement parts and industrial technology solutions provider, will now operate under the brand name of “Motion.” The timing of the rebrand coincides with Motion’s 75th anniversary.

“The goal of this change is twofold: to have the name ‘Motion’ as

well as the ‘Mi’ logo synonymous with and increasingly recognized as the premier industrial solutions company that we strive to be every day for our customers, and to promote and reflect that the Motion structure and strategy is cohesive, allowing a deeper focus on sales, expertise, and customer service that make us different and valued,” Motion President Randy Breaux said. “As it has for decades, the basis of the word, motion, in the company’s name stems from its role in keeping industry’s operations and machinery running.”

In January, the company held a groundbreaking ceremony at the site of the planned facility in Irondale, Alabama. Motion executives and local dignitaries participated in a socially distanced event to kick off the construction. The \$11.2 million 104,000-ft² building will house the area fluid power shop, hose and rubber shop, and engineering department.

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BETTER TOOTH PERFORMANCE LOWERS COST PER TON

Tougher teeth and optimized tooth tip speed improve production numbers and reduce operating costs

BY JESSE MORTON, TECHNICAL WRITER

Two of the best ways to improve roller crusher uptime, production, and operating costs are tougher teeth and optimizing tooth tip speed. Two field-proven, widely deployed offerings prove it. The feedback and data from customers shows the benefits available, which are substantial.

Carbide-impregnated Teeth

McLanahan Corp. reported its carbide-impregnated weld-on teeth increase throughput and are designed to significantly improve the overall efficiency of roll crushers.

The teeth offer wear resistance that improves uptime, which can give a significant boost to throughput and can help the crusher operate optimally, the company said. “Once teeth begin to wear, roll crushers will use more power to process the material because the teeth are struggling to grab the material and pull through. Worn teeth also produce more fines,” said Dan Holes, director, parts and service, McLanahan. “Carbide teeth are designed to maintain their height and leading edge longer.”

The teeth are currently offered in 70 different sizes and configurations and can be supplied on new crushers,

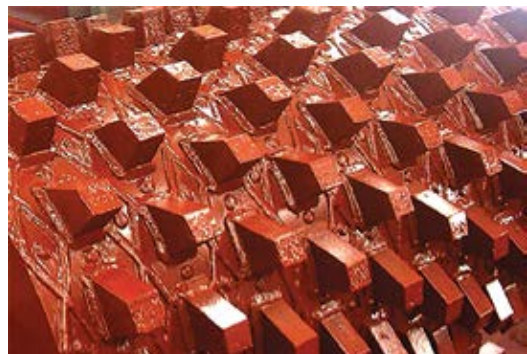
installed as part of a rebuild, or installed on existing roll elements made by McLanahan or other companies.

The solution arose from the desire to protect the top of teeth. “We recognized a need for carbide in more than one plane to further protect a tooth’s leading edge because we saw earlier successes using carbide tooth caps,” Holes said.

In 2003, McLanahan started developing replaceable teeth made with carbide. “Several issues had to be overcome, including the use of dissimilar materials, as well as the casting process that would allow for carbide to be evenly distributed on two planes of the crushing surface,” he said. “The solution was a casting impregnated with carbide particles of varying sizes in the front and top that could be successfully welded to base elements specific for a roll crusher design.”

In 2004, the teeth were trialed by a customer in the Powder River Basin that had been using McLanahan roll elements with teeth having carbide caps welded to their leading face. “The carbide-impregnated teeth were an instant success,” Holes said. “The mine was able to double their throughput before needing to address the segments.” The customer ordered two complete sets of roll elements in 2006.

As the teeth gained in popularity, the company used customer feedback to steer further development. “By meeting with our customers and talking with them about what they are seeing or asking them what they would change led us to make subtle changes to our welding process, hard-surfacing and even tooth layouts,” Holes said. “These changes have resulted in customers achieving increased throughput far beyond



Universally, customers that have adopted carbide-impregnated teeth report increased operating time and reduced maintenance. (Photo: McLanahan)

their expectations, and, quite frankly, ours as well.”

The benefits of increased uptime include reduced maintenance costs.

For example, a coal prep plant in Utah with a roll crusher with steel teeth was spending 36 hours per week building up teeth as routine maintenance. The rolls would be replaced every six months with rebuilds from a local shop. “After installing a set of roll shells rebuilt by McLanahan using carbide-impregnated weld-on teeth, the customer addressed some minor wear on the roll shell bodies after six months of operation,” Holes said.

“After 12 months of operation, some missing teeth were replaced,” he said. “At 16 months, the customer removed the shells and installed another set supplied by McLanahan.”

The customer now owns three sets so they can be rotated yearly with a spare set always in the waiting, he said.

Elsewhere in Utah, a phosphate operation with a 2011 McLanahan Double Roll Crusher was processing 2,000 tons per hour of plus-40-in. ore down to roughly 8 in. using hardened steel segments with each tooth hard-surfaced.



Weld-on carbide-impregnated teeth are offered in 70 sizes and can be built on to new McLanahan crushers. (Photo: McLanahan)

“The customer was forced to address wear on the segment teeth at least two shifts per week, due to the speed at which the roll assemblies were turning, combined with a high feed rate and the large feed size,” Holes said. In 2014, they installed one segment equipped with some carbide-impregnated teeth.

“Tried through the winter, the customer then ordered a half-set in spring 2015,” he said. “Over time, the original segments were rebuilt using carbide teeth.” Today, the mine rotates two full sets of segments with carbide teeth every six to nine months.

Those results are typical. “Roll elements with carbide-impregnated teeth have proven successful in many different applications, including ROM coal with a high percentage of ash, bauxite ore, phosphate ore, salt, and, most recently, limestone,” Holes said.

“No matter the application, all installations have reported increased operating time and reduced maintenance,” he said. “Although impossible to predict or guarantee their duration, many applications that have been converted to carbide-impregnated teeth have improved wear life a minimum of three to four times.”

Installation requires no training. Repair and replacement is the same as for a steel tooth. “Our teeth are simply welded in position using a welding process that we provide to our customers,” Holes said. If they encounter something uncrushable, the teeth are designed to break off just above the weld.

“To replace a tooth that has broken off, any remaining weld must be removed from the roll element body and the surface cleaned of contaminants,” he said. “Then, a new tooth is installed following our welding procedure.”

The teeth have proven to be successful and that success can be attributed to prioritizing customer feedback in the development process,

Holes said. “Our customers are the reason for our existence and longevity. We listen to what they have to say,” he said. “It is that philosophy and their trust in us that has allowed us to progress our carbide tooth offering to what it is today.”

Matched Velocity Technology

Komatsu Mining reported the Joy MVT-II sizer offers increased production, reduced fines generation and low operating costs. The sizers are also “very capable” of handling contamination, according to Komatsu Mining.

The unit, commonly described as a double-roll crusher, is typically installed as a secondary or tertiary crusher. “We have had customers ‘squeeze’ a sizer in a transfer point between either a feeder, conveyor or screen to solve a material handling problem,” said John McCarthy, product manager, sizers and surface feeder breakers, Komatsu.

In the most common arrangement, the unit reduces the size of feed from the primary crusher. “A 4:1 reduction ratio is typical at each stage,” he said.

The MVT-II uses 500-mm-long replaceable bimetallic cast-alloy steel

wear segments with weld-on teeth. Different product sizes can be attained by changing the wear segment.

For coal applications, white iron teeth come standard. Other alloys are optional to handle hard contamination.

The sizer features a one-piece solid roll shaft. Timing gears are oil lubricated. Helical gears offer greater power transmission and quieter operation, Komatsu reported. The frame is welded. The unit is wheel mounted for ease of maintenance.

The segments are replaceable and bolt on. “For coal, a set of wear segments lasts between 3 million to 8 million metric tons (mt) (3.3 million to 8.8 million tons) of material processed,” McCarthy said. “At that point, the segment teeth can be replaced.”

MVT stands for matched velocity technology. “The installation is configured so the speed of the mineral falling through the sizer matches the tip speed of the tooth,” McCarthy said. “Testing showed this matching velocity minimized (sub-4-mm) fines generation.”

Contrarily, if the roll speed decreases below or increases above the fall speed of the material, then “fines



The MVT-II offers high capacity in a relatively small footprint, and is known for low operating costs. The double-roll crusher sets the tip speed of the teeth to limit fines generation. (Image: Komatsu Mining)



This crushing station, engineered by Metso Outotec and Komatsu, which includes a truck dump hopper, feeder and sizer (orange), is installed at PT Titan Infra Energy's Muara Lematang mine in South Sumatra.

generation rapidly increases," Komatsu reported.

As a result, the MVT-II offers "very high capacity" in a compact package, McCarthy said. "Forces are internalized in the frame so costs for support

structures, foundations and future relocations are reduced."

That capacity means the sizers are known for their low operating costs, he said. "The MVT-II sizer is designed for productivity, ease of

maintenance and operation, and to improve profitability by reducing total cost of ownership."

For example, a unit in Indonesia takes sub-200-mm coal from a feeder breaker and crushes it to sub-50 mm at a rate of roughly 3,000 mt per hour (3,300 tons/hour). "The coal is fairly 'clean' with little contamination, and the operating cost for the machine is less than \$0.02/mt," McCarthy said.

The sizers also deliver similar results in rocky coal applications, he said. "We do have sizers at met coal mines in Australia with contamination above 150 MPa compressive strength," he said.

The sizer was originally developed by Stamler Corp. for their feeder breaker product line. In 2006, Stamler was acquired by Joy Global, which was acquired by Komatsu in 2017. "To date, more than 3,500 machines have been supplied for surface and underground mines," McCarthy said.

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CAT INTRODUCES UPGRADED MINING SHOVELS

The 2021 Cat 7495 and 7495 HF Electric Rope Shovels combine multiple standard feature upgrades that could increase operating efficiency up to 10%. Component enhancements, increased frame durability and improved serviceability could help reduce cost per ton of material moved by as much as 15%, according to Cat.

“Consistently, our customers tell us machine availability and productivity are primary contributors to their operation’s success. From the full adaptive control system for HydraCrowd to more innovative technology and data security, the advances made to the 2021 electric rope shovels reflect our commitment to meeting their needs,” said Dan Wyatt, Cat product manager for electric rope shovels. “Many of these improvements are compatible with shovels in the field, so customers can realize these gains through upgrades to their existing fleets as well as new machine purchases.”

A new propel gear case for the 7495 and 7495 HF models nearly doubles the life of propel gear cases in some extreme operating conditions. Adjustments to gearing geometry and advancements in tooth hardening enhance gear-case durability and productivity. The result is lower total cost of ownership as much as \$8 per hour when the drive system is replaced at one scheduled time, the company said. Also, an ecology drain simplifies oil draining and enables kidney-loop flushing, reducing abrasion-causing contaminants and oil change frequency, Cat said.

Updates to the 7495 AC electric-drive system deliver greater reliability, improved maintenance access, enhanced safety, and expanded high-altitude and temperature capabilities. A liquid-cooled motion regulator cabinet efficiently dissipates heat generated by electrical components. A faster propel transfer switch



cuts lag time by 75% to improve productivity, while common motors in multiple applications means fewer parts to stock, improved parts availability and simplified maintenance.

A reconfiguration of the crawler carriage allows drive shaft and tumbler replacement from the outboard side without removing the propel transmission. With this design, thrust loads are evenly distributed on large, tapered roller bearings rather than bronze thrust plates, increasing durability to align with 25,000-hour planned rebuilds, even in harsh environments, according to Cat.

Stress from every load passes through the swing rack. An enhanced design includes a single-piece rail casting that eliminates vertical segment cracks to increase durability. The rail provides a uniform path for roller movement, preventing rollers from coming loose and creating irregular wear patterns. The upgraded third rail improves access for inspection and retightening plus added support to the thrust rail during operation. New swing girder bushings and girder-to-chassis shim designs offer improved access, reducing service time.

Both the 7495 and 7495 HF come standard with Product Link Elite, which transmits critical machine operating data such as utilization, location and condition via cellular or site internet connection. Added router functionality helps to protect data security. Advanced productivity tools within Product Link Elite enable a cycle segmentation algorithm, and the combined data allows for advanced analysis of productivity.

www.cat.com/mining

LECO Adds Hydrogen to the 828 Series

LECO announced the addition of hydrogen analysis capabilities to the 828 series, which will transform the way users determine carbon, hydrogen, and nitrogen in a variety of petrochemical and other organic materials. The CHN828 maintains the core capabilities and performance of previous generations of LECO macro-combustion instruments while possessing key improvements in throughput, uptime and reliability. By incorporating state-of-the-art hardware and an on-board touch-screen software platform with rapid analysis times, the CHN828 operates at a low cost-per-analysis and



allows users to easily handle the most demanding sample applications.

The CHN828 features a custom interface designed specifically for touch-screen operation with LECO's exclusive Cornerstone brand software, which enables complete access to analysis control, method settings, diagnostics, reporting and more — without sacrificing valuable bench space. The Cornerstone Mobile option provides access to data, plots and instrument status from the user's smartphone, tablet or desktop computer.

Users can maximize their lab's efficiency and productivity with a number of 828 series advantages, including rapid cycle analysis times as low as 2.8 minutes and an optional 120-sample position autoloader.

www.leco.com

Synthetic Tow and Winch Lines

Phillystran said its X-Tremaloop connection is the first synthetic rope

where the soft eyes can open and close. It uses a simple knot/eye connection enabling single hand use. The opening and closing of connection hardware or even the hardware itself can be eliminated when using the X-Tremaloop.

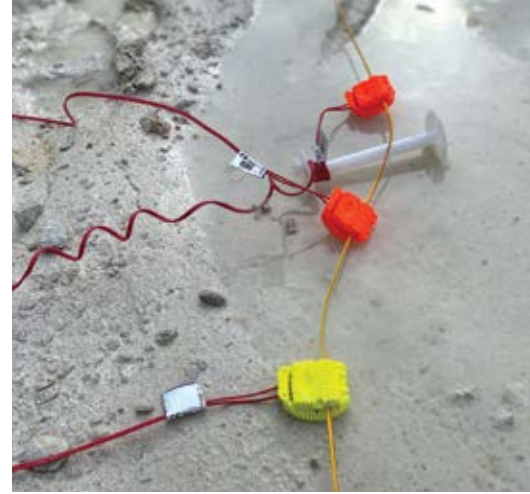
Made from a 12-strand X-Tremaline (high modulus polyethylene) rope, X-Tremaloop has an incredibly high weight-to-strength ratio. Compared to a steel wire sling of the same length and capacity, X-Tremaloop will match the breaking strength at only 15% of the weight. With the X-Tremaloop, a quick connection can be made without the need to open heavy hardware such as a shackle or a pin in a truck. In fact, feeding the X-Tremaloop through any smooth strongpoint with a D/d ratio greater than 1 will complete the connection.

Standard X-Tremaloop connections are available in 6-, 9- and 12-ft lengths with a working load limit of 5 to 90 metric tons (mt) or 11,000- to 143,000-lb strength capacity. Larger sizes available upon request.

www.phillystran.com

Connectors for Electronic Dets

The new E*STAR Connectors from Austin Powder have an all-weather resistant seal, ensuring E*STAR detonators will function as intended even in low temperatures or precipitation. Built with field conditions in mind, E*STAR Connectors are easy to handle while wearing gloves because of the grip provided by anti-slip contours and the robust flip-top hinge. A



blaster can open the connector using just one thumb, yet once closed, the connector is sealed and secured from dirt, debris and moisture ingress.

So much innovation is packed into these small devices to ensure the highest standard of usability, reliability and safety. Duplex bus line wire eliminates the need to split wires when making a connection, thus saving time and decreasing the chance for wire damage during splicing. With E*STAR, the connection is made by simply placing the duplex wire into the connector (in any polarity) and snapping the lid shut.

"E*STAR connectors are leading the industry with their new innovative 'double connect' capability on both the leg wire and duplex wire. The double connect capability allows for eight points of contact on the detonator leg wires and eight contact points on the bus lines. The new E*STAR connector effectively ensures a 100% reliable connection of all wires within the connector, at all times," said Campbell Robertson, global manager of Electronic Initiation Systems at Austin Powder. "Blasters can also perform through connector testing without reopening the connector, streamlining the testing procedure."

Also, the new connectors make both detonator-to-logger and detonator-to-branch connections faster and more reliable. Wire type and length are identifiable at a glance because of standardized color-coding. The connector's back is flat with ample surface area so the delay time or other pertinent information can be noted.

www.austinpowder.com





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Western U.S., Canada & Australia

Frank Strazzulla
Tel: +1 949-459-1767
fstrazzulla@mining-media.com

Germany, Austria & Switzerland

Gerd D. Strasmann
Tel: +49 202 28 14 64 83
info@strasmann-media.de

Scandinavia, U.K. & European

Colm Barry
Tel: +46 (0) 736 334670
colm.barry@womp-int.com

Japan

Masao Ishiguro
Tel: +81 (3) 3719-0775
ma.ishiguro@w9.dion.ne.jp

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COURT VACATES ACE CLEARING WAY FOR THIRD GREENHOUSE GAS STANDARD FOR POWER PLANTS

BY MEGAN MCLEAN



On January 19, the U.S. Court of Appeals for the District of Columbia vacated the former President Donald Trump administration's Affordable Clean Energy (ACE) Rule for power plants and concluded that the ACE Rule "rested critically on a mistaken reading of the Clean Air Act."

The court's decision will send the U.S. Environmental Protection Agency (EPA) back to the drawing board, opening the door for President Joe Biden's administration to pursue its own rule making.

Behind EPA's Controversial Greenhouse Gas Regulations

The Clean Power Plan (CPP) and the ACE Rule both have the same goal: reduce greenhouse gas emissions from existing fossil fuel-fired electric plants. But the two rules are extremely different. While the CPP set a goal of reducing greenhouse gas emissions by 32% below 2005 levels by 2030, the ACE rule was only expected to reduce greenhouse gas emissions by 1.5% by 2030.

The CPP was the centerpiece of former President Barack Obama's ambitious "Climate Action Plan" to address climate change. The CPP set the first-ever national emissions guidelines designed to reduce greenhouse gas emissions from existing fossil fuel-fired electric plants. The CPP included "beyond the fence line" methods to meet its carbon reduction goals, including actions that reduced demand by shifting generation to facilities not in the source category being regulated under the plan.

The ACE Rule reversed the EPA's prior position and instead limited the

rule's scope to "emission reduction measures that can be applied to or at an individual stationary source" (83 Fed Reg. at 44,752). The EPA based this shift on a narrow interpretation of the Clean Air Act, which would only allow the agency to consider greenhouse gas control methods "based on a physical or operational change to a building, structure, facility or installation at that source rather than measures the source's owner or operator can implement at another location" in determining the best system of emission reduction (83 Fed Reg. at 44,752). Accordingly, the ACE Rule relied entirely on on-site (within the fence line) efficiency projects, such as heat rate improvements as a means of controlling greenhouse gas emissions and did not impose any carbon reduction goals for coal-fired facilities.

Shortly after the ACE Rule was promulgated, state and municipal governments, power utilities, renewable energy trade associations, and public health and environmental advocacy groups challenged the rule in the D.C. Circuit. The primary question before the court was whether the EPA had authority to regulate "outside the fence line." In other words, can the EPA require greenhouse gas emissions from power plants that would require generation switching? In its opinion, the court concluded that the EPA's rescission of the 2015 CPP and its subsequent promulgation of the 2019 ACE Rule failed because they were based on an incorrect assertion that Congress, through the Clean Air Act, intended to limit the agency's authority to control greenhouse gas emissions to the imposition of at-the-source measures. The court found no support for the Trump EPA's new interpretation of the statutory text remarking that "[p]olicy

priorities may change from one administration to the next, but statutory text changes only when it is amended." To the contrary, the court found that the Clean Air Act does not limit the EPA to only controls that can be applied at and to fossil fuel-fired electric plants.

Moving Forward

The timing of the court's decision to vacate and remand the ACE Rule came just a day before the inauguration of President Joe Biden. As such, President Biden and his EPA will have a third bite at the apple, yet another attempt to come up with a plan to regulate greenhouse gas emissions from power plants. Indeed, the Biden administration no longer has to go about the rigorous and time-consuming process necessary to roll back an official regulation, and can immediately begin considering how it wants to regulate greenhouse gases from power plants. The decision not only opens the door for the Biden administration to promulgate new rules regarding emission reductions, but also restores the agency's flexibility in developing those rules.

This presents a great opportunity for the Biden administration as he has stated many times that one of his administration's key focuses will be on climate change and he has already nominated key figures to lead the charge in addressing greenhouse gas emissions, including the appointment of a first-ever climate czar in his Cabinet. Regardless, it will be interesting to see whether the Biden EPA can issue a rule that can withstand the inevitable court challenges that have held up the last two iterations of the rule.

Megan McLean is a senior associate for Husch Blackwell. She can be reached at megan.mclean@huschblackwell.com.

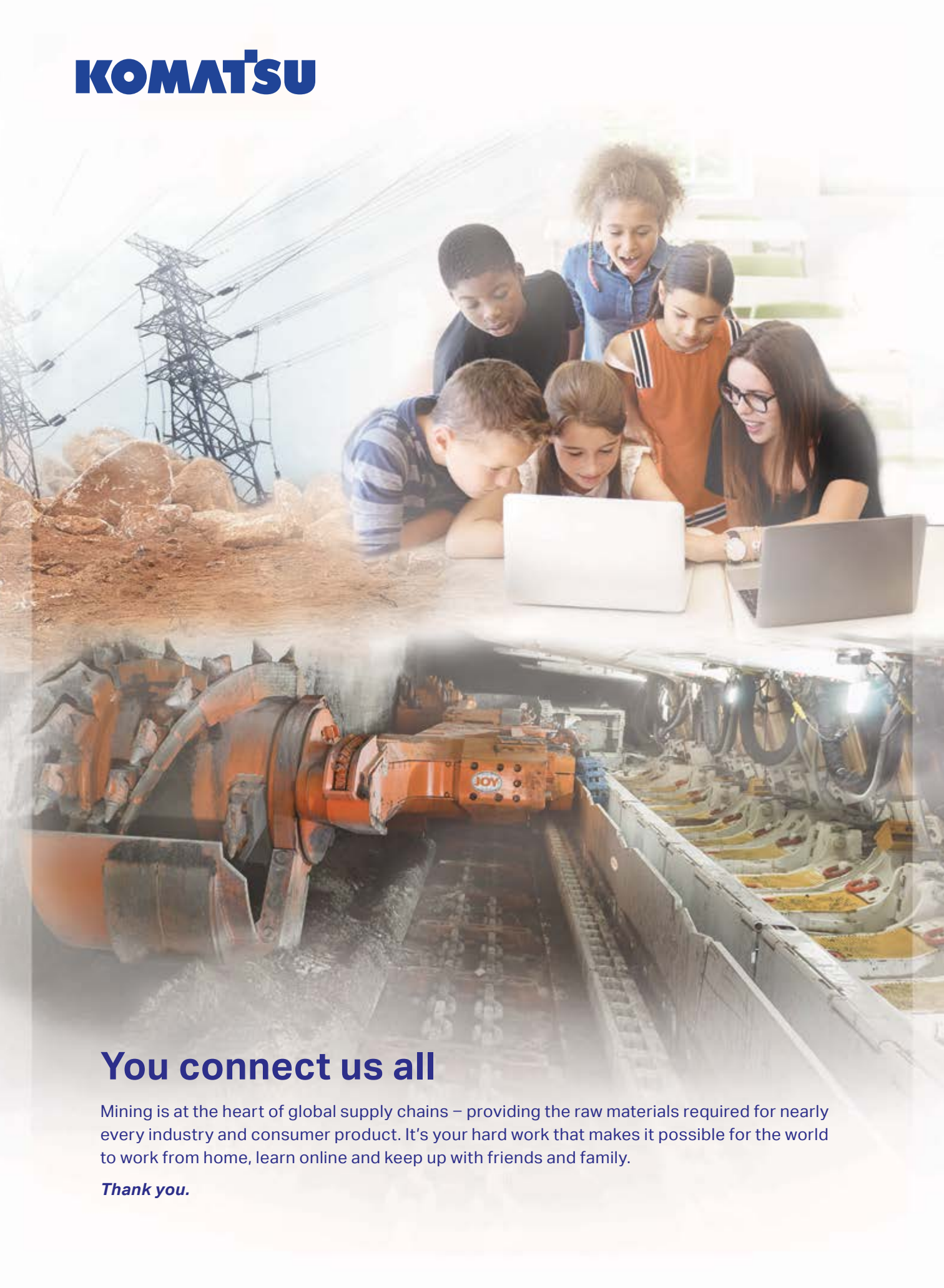


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