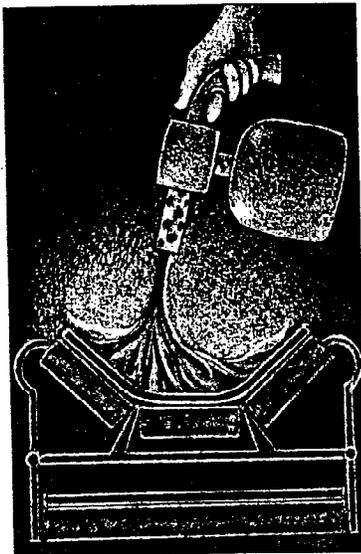


Bureau improves belting flammability tests



Bureau of Mines (BoM) researchers are studying ways to reduce the number of conveyor-related accidents. Since conveyor systems account for about 20% of underground mine fires, research is being conducted to minimize the occurrence of fires by evaluating the flammability of different types of conveyor belting.

A laboratory-scale test procedure has been developed to evaluate flammability. Data gained from tests will be used during research to improve the fire resistance of belting material. The test is conducted in a 1.5-foot (ft)-square, 6-ft-long ventilated tunnel with a 9-inch-wide, 5-ft-long belt sample. This sample is mounted on a rack and one end is exposed to flames from a gas burner for five minutes. A belt passes the test if, in three separate trials, a portion of the sample (across its width) is undamaged by fire.

Because of the test's success and reliability, the Department of Labor's Mine Safety and Health Administration plans to replace the current conveyor-belt acceptance fire test specified in the Code of Federal Regulations with the BoM's test procedure. A voluntary acceptance program would be implemented permitting belt manufacturers to submit belts for evaluation under the new test procedure. Belts passing the test would receive an acceptance number certifying their enhanced fire resistance.

To date, BoM has tested more than 70 different standard and experimental belt formulations from eight manufacturers. Approximately 50% of the tested belts have passed the exam.

For additional information about the belt flammability test, contact the BoM Pittsburgh Research Center at 412/892-6630.

Pyrolysis research advances toward commercial stage

Two University of Cincinnati (UC) engineering professors have won a patent on a novel coal-cleaning

device which, they claim, can remove up to 95% of the organic sulfur and 20% of the nitrogen chemically bonded in coal.

The system works through mild pyrolysis. Pulverized coal is heated to between 350° and 550° C. As the heated coal travels through an auger tube in one direction, hydrogen sulfide is driven off and captured by a layer of calcium oxide traveling in the opposite direction through an outer tube.

The device has only been operated as a bench-scale model, handling about two pounds of coal per hour. The next step will be scaling the model up and refining the design.

The biggest problem to date has been the tendency of certain types of coal to clump up and clog the coal cleaner. The sticking problems can be solved by adjusting the temperature and operating conditions.

Another advantage to the UC coal-cleaning system is cost efficiency. Needless to say, it is much cheaper to clean coal instead of stack gasses. The results of a UC cost analysis show costs of \$800 to \$1,000 to remove one ton of sulfur dioxide with a conventional wet-scrubber system. The UC coal-cleaning system would remove an equivalent amount of sulfur for about \$150.

Although the technology could be adapted for use with many types of coal today, the device is about five years away from full-scale commercial application.

The U.S. Department of Energy and the Ohio Coal Development Office provided funding for the project. For more information contact UC professors Tim Keener or Soon-Jai Khang at 513/556-3676

Foaming mud cement snuffs fires

The base components of the foaming mud cement (FMC) mixture typically consist of soil, Portland cement and fly ash. The mixture has the ability to control a fire by isolating the burning coal from any oxygen source in a thick, foam-like slurry. It prevents further oxidation or combustion of the coal.

The FMC also fills voids left by the burning coal and, once hardened, provides support for the overburden, minimizing surface subsidence. Various mix designs can provide compressive strengths from 200 psi to more than 2,000 psi, depending on the expansion of the material. Although a variety of gasses may be used to effect the expansion, normal air performs as effectively as any of the gasses tested.

FMC is easily produced using standard equipment available at most concrete bulk plants.

Copies of the report are available from the National Technical Information Service (Tel: 703/487-4650) #PB89-223-853. □

COAL

VOLUME 98, No. 11

Features

The Shortest Distance Between Two Points Is Straight Up	27
Vertical conveyor solves space problem	
Belt Sag Limits High-Capacity Conveyors	30
Advances in tail pre-tensioning and multiple-drive boosters allow increased conveyor length	
How to Buy Barge Transportation	35
The right approach can reduce transportation costs	
Usibelli Tames Low-Rank Coal Dust	41
Multi-component additive suppresses dust during coal handling	
Experts Predict Clean Air Compliance Strategies	45
Low-sulfur coal demand will rise, but nobody knows by how much until utilities disclose their plans	

Coal in the News

Activist ranks BP's as most dangerous mines in 1990	9
Operators dispute rankings by the Occupational Safety and Health Law Center	
UND coal waste discovery beneficial	13
Indiana coal producers rejoice over researchers findings of no environmental damage	
Teco continues to buy oil's coal holdings	16
Major oil companies forced to sell holdings; Teco triples its coal production	
TVA goes with local coals	19
Decision to burn high-sulfur, western Kentucky coal relieves embattled region's mining industry	



A vertical conveyor climbs the side of BethEnergy's Eagle Nest mine in West Virginia. Photo courtesy of Continental Conveyor.

Departments

Coal in the News	9
Events	11
News briefs	12
Coal worldwide	23
Marketwatch	25
Developments to watch	51
Operating ideas	52
Newsmakers	53
Computer forum	54
New products	56
New literature	58
Mining mart	60
Classified advertising	62
Advertising index	66