Coal mine air-deficient gas oxidation power generation

What is the gas generation mechanism during low-temperature oxidation of coal?
By comparing the gas generation during coal oxidation,we reached conclusions regarding the gas generation mechanism during low-temperature oxidation of coal. It is found that the methylene and methyne groups attached to the aromatic rings are the main functional groups that generate peroxides.

Do different gas mixtures affect the oxidation activity of coal?
ESR and FTIR experiments were used to investigate the effects of different gas mixtures on the activity of coal during low-temperature oxidation and the oxidation reaction of coal surface functional groups. The mechanism of chemical oxygen inhibition of mixed gas was studied by density functional theory.

How does dry air affect oxidation of coal?
The concentration of free radicals in coal under dry air condition is higher than that under inert mixed gas condition during oxidation heating at 30-230 °C. The oxidation ability of -CH 3, -OH and oxygen-containing functional groups in the mixed gas reaction is inhibited.

How does CO2 affect coal oxidation?
The results show that the larger the CO 2 component in the mixed gas,the higher the ability to inhibit coal oxidation. The concentration of free radicals in coal under dry air condition is higher than that under inert mixed gas condition during oxidation heating at 30-230 °C.

Can air and CO2 prevent coal spontaneous combustion?
At present,relevant scholars mainly use CO 2,N 2,or air mixed with CO 2 or N 2 to prevent coal spontaneous combustion,but there is a lack of researchon the influence of different components of gas mixture on the low-temperature oxidation process of coal.

How can accelerating coal mining reduce the spontaneous combustion of coal?
At this time,accelerating the progress of coal mining can reduce the reaction time of coal and oxygen in the goaf,thereby slowing down the spontaneous combustion of coal. A low-temperature inert liquid (LN 2 /LCO 2) is applied to prevent the spontaneous combustion of coal.

o NM0066 "Baseline methodology for grid-connected coalmine methane power generation at an active coal mine with existing methane extraction and partial utilization," submitted by Hegang ...

The concentration of free radicals in coal under dry air condition is higher than that under inert mixed gas condition during oxidation heating at 30-230 °C. ... coal mine ...

Clear utilization of low-concentration coal-bed gas (LC-CBG) would save energy, mitigate greenhouse gas

emissions, and reduce explosion accidents during a coal ...

It is necessary to change the air supply rate of the working face during the withdrawal of fully mechanized mining, making it important to study the oxidation ...

Air pollutant modelling dispersion caused by lignite coal-fuelled power plants in Western Balkans countries in Europe a PM 2.5 annual mean; b SO 2 annual mean (adapted by Casey ()). ...

ESR and FTIR experiments were used to investigate the effects of different gas mixtures on the activity of coal during low-temperature oxidation and the oxidation reaction of ...

The regenerative oxidation of coal mine gas is utilized to effectively reduce the emission of low-concentration coal mine methane [] in coal mine gas power generation and ...

Among various energy sources, coal is a crucial resource, most abundantly present, and is also the cheapest source of energy. The continuous increases in global energy ...

Plymouth, Michigan, September 9, 2015 - Dürr Systems, Inc. Clean Technology Systems (CTS), has completed the installation and commissioning of the world"s largest ventilation air methane/coal ...

The project enables 8.9 million Nm 3 methane/y to be used for power generation, reduces greenhouse gas emissions by 1.4 Mt/y of CO2e and significantly reduces ...

However, the potential danger of coal mine gas (CMG) and methane emissions can be greatly reduced when they are harnessed properly for power and heat generation. Since the early ...

Clear utilization of low-concentration coal-bed gas (LC-CBG) would save energy, mitigate greenhouse gas emissions, and reduce explosion accidents during a coal-mining process. In this paper, a novel catalyst ...

At a typical gassy mine methane is emitted in three streams: (1) mine ventilation air (0.1-1% CH 4), (2) gas drained from the seam before mining (60-95% CH 4), and (3) gas ...

This study aims to improve the utilization efficiency of mine gas, reduce greenhouse gas emissions, and promote the low-carbon and green transformation of the coal industry. A 10 kW gas regenerative thermal oxidizer ...

this coal mine, which has a guiding significance for other coal mines to realize low concentration coal bed methane emission reduction. 2 Investigation of gas source in coal mine A coal mine ...

In coal mining, for example, soft coal mines suffer from coal and gas outbursts [7,8], dust explosions [9], fire

[10, 11], whereas hard coal mines suffer from rockburst ...

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