Coal mine air-deficient oxidation power generation

How can coal mine ventilation air methane reduce the environmental impact?
In order to minimise the volume and environmental impact of coal mining wastes and coal processing by-products (as well as coal mine ventilation air methane, or VAM) while producing clean electric power, a new process concept, as illustrated in Fig. 7, has been proposed .

How much methane is emitted by coal mining?
The methane emitted by coal mining is called "ventilation mode",and the concentration is as low as 1% or less3,which is mainly divided into three parts: (a) mine ventilation air (0.1-1.5% CH 4) 4,(b) methane drained from the seam before mining (60-95% CH 4) 5,and (c) methane drained from worked areas of the mine (30-95% CH 4) 6,7.

Does oxygen concentration affect thermal oxidation of coal?
Under lean-oxygen conditions,the oxygen concentration has less effecton the mechanism function most likely to describe the thermal oxidation process of coal. Meanwhile,there was a kinetic compensation effect during the CSC under the lean-oxygen atmosphere.?

Do coal ranks affect oxidation and combustion under lean-oxygen conditions?
Based on TG analysis,the CSC process was divided into three stages and described with critical values. The results showed that the coal ranks have a negative effecton coal oxidation and combustion under lean-oxygen conditions. The difference in the critical temperature of differentcoalswassmallastheoxygen concentration varied.

How does coal mining affect the quality of coal?
In order to produce coal and upgrade coal quality,coal mining inevitably generates large volumes of low heating value wastes,including coal gangue,waste coal,and coal washery rejects,which are dumped near mine sites.

Does oxygen concentration affect kinetic behavior of high-rank coals at low-temperature oxidation?
The reaction mechanisms of high-rank coals at a low-temperature oxidation stage were more influenced by oxygen concentration than low-rank coals. Evaluations of kinetic behavior showed that activation energy decreased in a linear manner as the oxygen concentration decreased.

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 ...

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 ()). ...

heating in mining area, bathing, central air shaft heating, coal bed methane driven air conditioning unit, coal bed methane power generation, slime drying, canteen gas, and gas for nearby ...

Semantic Scholar extracted view of "Coal mine ventilation air methane catalytic combustion gas turbine" by S. Su et al. ... Abstract Development of a model for optimal power generation from ...

Electricity generation via low concentration coal bed methane (LC-CBM) can save energy and reduce greenhouse gas emissions. Solid oxide fuel cell (SOFC) is a very promising power ...

employed globally at active underground coal mines, it offers the potential to mitigate substantial quantities of methane emissions. In addition, oxidizers have the ability to tap the excess heat ...

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 ()). Particulate matter (<= 10 µm in diameter) is ...

Methane emissions from active mines will decrease as coal production is reduced during a transition to clean energy. Methane mitigation can be achieved by reducing strata disturbance ...

Web: https://gennergyps.co.za