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Highly effective methane capture for utilization from underground coal mines

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T his paper highlights a highly effective and reliable gas capture method for use in underground Longwall coal mines. This system targets methane emissions relating to caving process during Longwall mining. Removal of Methane emissions entering the mine ventilation not only improves overall risk with respect to safety and production, but also provides a highly pure gas flow for Power generation.

This method targets methane as it is being released from overlying strata just prior to entering the ventilation stream. This method replaces vertical Goaf wells minimizing surface impact. In fact it is a system that needs very little surface space and can also be utilized in multi seam and deep operations.

The design has achieved 85% Methane Gas Capture at a NSW (Australia) operation and proposes additional modifications for another operation in Queensland (Australia) to achieve similar results.

Utilization potential is the benefit of this method. A low oxygen, high purity flow dependant on the emission volumes is easily estimated to predict power creation potential. The potential for power generation at low cost should be deemed as highly attractive. If power generation is not available Methane destruction can also be achieved by flaring.

This method requires directionally drilled and reamed holes above the longwall blocks that are connected to underground pipes and a surface suction plant. This infrastructure creates a large pressure drop to the caving goaf to overcome ventilation pressures and to draw the gas to the surface for utilization.

Biography

Miles has completed his BEng (Mining) at Wollongong University and Ventilation Diploma at the University Of New South Wales School Of Mining. He is the director of Drive Mining, and has been in underground Coal operations for over 23 years. He is a Mine Manager and is a Member of the Mine Manager's Association of Australia.

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