



## Case Study—Mine Safety Monitoring (China)

### CREATING SAFER SURROUNDINGS

#### Introduction

Methane is released as a direct result of the physical process of coal extraction. Coal is extracted through mining which in turn releases methane previously trapped within the coal seam into the air supply of the mine as layers of the coal face are removed, thus creating a potential safety hazard. Methane emissions also arise from the collapse of the surrounding rock after a section of the coal seam has been mined and the artificial roof and wall supports are removed as mining progresses to another section. The debris resulting from the collapse is known as gob and also releases methane or 'gob gas' into the mine.

Although methane is released as a direct result of coal mining, other types of mineral mining also require a monitoring regime as methane can enter the enclosed mine working from a number of other sources. Methane monitoring for safety purposes is therefore not constrained to the coal mining industry.



Typical Long Wall Coal Seam

OptoSniff® is particularly well suited to this working environment due to its inherently safe operation and wide detection range and coal mining was chosen as the preferred trial market due to the particular challenges in this environment.

#### Project

OptoSci installed a small 3-point system to prove the technology and operation within the mine environment. The system consisted of 3 stainless steel tunnel sensors

installed 5km down a working mine. The methane readings from the sensors were regularly compared against spot readings from traditional portable sensors.

The sensors recorded continuous methane levels of 5000ppm and compared favourably to the comparison Sensors.

#### Summary

The OptoSniff sensors performed well in the hostile coal mining environment, suffering minimal contamination and no loss in performance.

Although only a small scale trial, the system performance highlighted the advantages of OptoSniff for use in the mining industry.

- Long sensor network well suited for deep underground mines.
- Low maintenance sensors, ideal for 'mined-out' or low traffic areas.
- Intrinsically safe. No electrical power within gas sensing areas.



Low traffic mining area

#### Further Reading

For additional information on using OptoSniff for mine applications please see our website.

<http://sniff.optosci.com/mine-safety/>