

MINING FIRES - IS YOUR SITE SAFE?



The Colossal Cost of Mine Fires

Despite downturns in recent years, mining in Australia remains a significant contributor to the Australian economy. It generates \$138 billion per year, representing over half of total goods and services. Contributing 6-7% of Australia's GDP, it outperforms both agriculture and tourism at only 3% and 2% respectively. The industry provides job opportunities for 187,400 people who are directly involved in mining activities. As a result, Australia is one of the world's largest producers of aluminium, copper, gold, iron, mineral sands, zinc and coal¹.

Australia is the world's largest exporter of coal, which is mined in every state of Australia. It also provides 85% of Australia's electricity production, with 430.9 million tonnes of coal mined in 2013/14². However, the presence of hot mining machinery, flammable liquids, combustible materials, and the remote nature of mining puts mine sites at a high risk of fire³. Mine fires may begin as a result of lightning, forest fires, and natural occurrences in coal mines⁴.

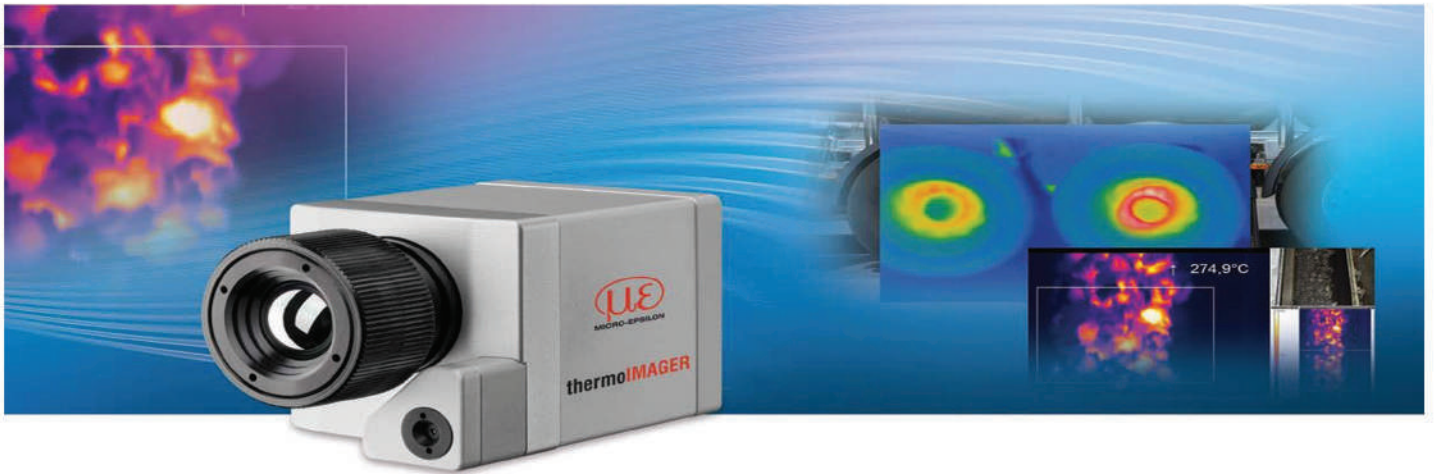


Coal mines are especially prone to fires, as some coals may self-ignite at temperatures as low as 40°C. Coal fires are a serious health and safety hazard to local residents and miners. They release toxic fumes, reigniting grass, brush, or forest fires, and can have economic, social and ecological impacts. Failure to detect and contain mine fires can cause mining sites to be shutdown, resulting in millions of dollars in lost revenue and damages. Throughout the years, mine fires and explosions have claimed many lives. In the 1900s, explosions at two mines in Australia resulted in the death of 171 miners. A recent incident at the Hazelwood coal mine saw thousands of residents affected by hazardous smoke due to the coal mine fire⁵.

Detection and Prevention

Before attempting to extinguish coal seam fires that are close to the surface, its location must be determined as precisely as possible. Underground coal fires of over 1000°C may raise the surface temperature by only a few degrees. Huge quantities of coal stored in bunkers and silos are also a fire risk due to spontaneous combustion. Often, coal is transported using a conveyor belt system of several kilometers in length. This highly increases the chance of spontaneous combustion compared to storage facilities where the coal lies still.

Prevention is better than cure – this holds especially true in this case. Early detection followed by counter measures is the key to fire prevention. An early fire warning system has to be put in place, comprising of several thermal imaging cameras that alert personnel and trigger sprinklers automatically whenever temperature rises above a predetermined level.



A new series of thermal imaging cameras offered by Bestech Australia provides extremely high optical resolutions for this purpose. The wide measurement range from -20 to 1500°C and high thermal sensitivity ensures the smallest changes in temperature will be picked up. Built to be used in the field, its extremely lightweight, robust and compact design ensures ease of use and durability. Bestech has over 40 years of experience in the mining industry, providing integrated, cost-effective measurement systems. In addition to thermal imagers, underground coal mines should be equipped with permanently installed sensor systems. These measure and relay pressure, temperature, airflow and gas composition to the safety monitoring personnel, giving them early warning of any problems. Bestech also offers IECEx rated explosion-proof pressure sensors and pressure gauges, having been designed to be safe up to 20,000 psi. Specialised collision avoidance lasers are also available to minimise accidents around the mining site.

The wide range of products from Bestech and the flexibility of customisation ensures project requirements will be met. With its team of dedicated application engineers, only the most appropriate sensors for the application will be recommended with the highest reliability and safety aspects in mind. Their expertise, combined with excellent after-sales service makes them the supplier of choice for mining sensors.

To find out more about what's available to ensure the best safety practices, contact Bestech at 03 9540 5100 or visit www.bestech.com.au



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