

Portable Emissions Analyzers for Mining Applications



Application Note # IA-14-0302

When extracting and refining valuable geological materials from the earth (eg. limestone, aluminum oxide, gold), a variety of industrial combustion processes are required. The machinery used in these processes such as industrial engines, boilers, and smelters can emit highly toxic gases that are harmful to the environment and to human life. Using a portable emissions analyzer enables mining personnel to ensure personal and environmental safety, while optimizing the performance of the mining operation.

Emissions Monitoring:

At any given mining site, significant levels of CO, CO₂, NO_x (NO + NO₂), SO₂, H₂S, & C_xH_y hydrocarbons can be emitted into the air causing serious harm to the environment. Each year, emissions regulations are becoming more stringent in order to limit the creation of excess greenhouse gases. In addition to the typical emissions that are generated by the many combustion sources present at mines, the materials being mined (eg. gold) can cause the emissions to be particularly dirty and corrosive. Portable emissions analyzers provide accurate measurements of important emissions parameters and can allow for easy reporting to regulatory agencies.

Personal Health & Safety:

High levels of carbon monoxide in ambient air can cause headaches, fatigue, nausea, and even death in extreme cases. NO_x, especially NO₂, can cause serious respiratory issues, and unburned combustible hydrocarbons can be a safety hazard especially at higher levels that can be ignited. Regular emissions testing with a portable emissions analyzer will alert mining personnel of potentially dangerous conditions.

Performance Optimization:

Measuring the O₂ and CO levels in the exhaust or flue gas from generator engines or boilers, for example, can provide an indication of how lean or rich an engine is burning or how efficiently a boiler is running. The combustion analyses can be utilized for tuning of the engines and boilers for optimal combustion performance. Optimizing engine and boiler performance will save both time and money.

Instrumentation Solution:

E Instruments' **E8500** is a complete portable emissions analyzer that can measure up to 9 gases including O₂, CO, CO₂, NO_x (NO + NO₂), SO₂, H₂S, & C_xH_y hydrocarbons and comes standard with a built-in thermoelectric chiller for superior flue gas conditioning and real-time data-logging software. High temperature gas sampling probes with a sintered filter can be provided for many mining processes that produce flue gases with very high temperatures and large amounts of dust, particulates, and ash.



E8500