



CASE STUDY EMISSIONS ANALYSIS

Portable emission analyzers in the mining sector

OVERVIEW

At each mine site, significant levels of CO, CO₂, NO_x (NO + NO₂), SO₂, H₂S and C_xH_y can be emitted and cause serious damage to the environment. For this reason, emission regulations are becoming increasingly stringent each year in an attempt to stem the production of greenhouse gases.

In addition to the typical emissions generated by the numerous combustion sources present in mines, the very minerals extracted can lead to emissions being particularly dirty and corrosive.

THE PROBLEM

Mining involves several industrial combustion processes. The industrial engines, boilers and foundries involved can emit highly-toxic gases that are dangerous for both health and the environment.



HEALTH HAZARDS

It is necessary to ensure a healthy environment for workers.



DANGER FOR THE ENVIRONMENT

Monitoring emissions into the atmosphere facilitates compliance with the limits set by regulations in force (EPA, OSHA and others).



EFFICIENCY AND MAINTENANCE

The effectiveness of mining operations must be optimized to save time and money.

HEALTH AND SAFETY

A high concentration of carbon monoxide (CO) in the air can cause headaches, fatigue, nausea and even death in extreme cases.

NO_x, and especially NO₂, can cause serious respiratory problems whilst unburned hydrocarbons can pose a serious safety hazard, given the risk of igniting at high concentrations.

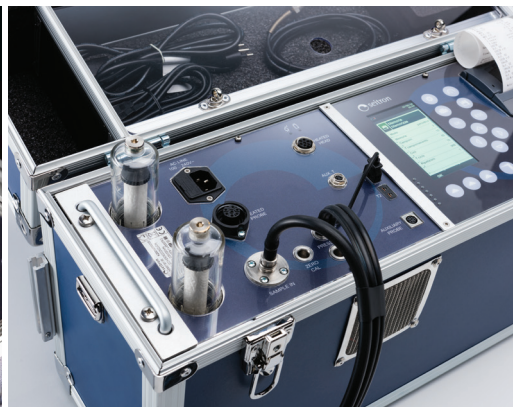
In this sense, **regular monitoring** of emissions at key points **through the use of portable analyzers** can promptly alert workers to potentially dangerous situations.



OPTIMIZING PERFORMANCE

Measuring the levels of O₂ and CO, for example in exhausts from machinery or generators, can provide an idea of how rich or poor the combustion mixture is and thus **how efficient the process itself is**.

Analysis can thus be used to regulate industrial engines, boilers, foundries and so on, in order to maximize their effectiveness, with a consequent optimization of the extraction processes and savings in both time and money.



THE SOLUTION



THE INSTRUMENTS

Chemist 900



THE GASES INVOLVED

CO, CO₂, NO_x (NO+NO₂), SO₂, H₂S, C_xH_y

Chemist 900 is a complete portable analyzer that can measure up to 9 gases, including O₂, CO, CO₂, NO_x (NO + NO₂), SO₂, H₂S and C_xH_y. It can even be equipped with an additional NDIR bench for analysing a further 3 gases. The Chemist 900 can also be used with a Peltier chilling condensation assembly to dehumidify and purify gases for a more accurate analysis of water-soluble gases, such as SO₂ and NO₂. To render the condensing group more efficient, it is advisable to utilise a special probe with a heated head and/or heated tube for gas sampling. This applies particularly to environments such as mining sites where there is a presence of high-temperature gas, dust, ash and particulate matter.