Top 10 reasons to consider "Real time" mine air quality monitoring

1. **Increase mine productivity**
2. **Reduce blast clearance time**
3. **Reduce energy consumption**
4. **Increase worker productivity**
5. **Reduce capital expenditures**
6. **Meet & exceed worker health and safety regulations**
7. **Reduce injuries and insurance claims**
8. **Minimize and identify fires and explosive hot spots**
9. **Measure and reduce greenhouse gas emissions**
10. **Getting the most out of emerging – and existing – technologies**

1. **Increase mine productivity**. *"Most mines tend to be more ventilation constrained than production constrained,"* said Glenn Lyle, R&D Program Director, of the Centre for Excellence in Mining Innovation (CEMI).. *"If you had ventilation available, you could likely achieve higher production rates."* Air quality monitoring easily identifies the areas that require more and better air.

2. **Reduce blast clearance time.** Hard rock mines utilize drill and blast operations and as such ventilation is required to clear toxic blast fumes prior to work place re-entry. Real time air quality monitoring can reduce blast clearance times from 1 to 2 hours per shift.

3. **Reduce energy consumption.** Underground mine ventilation is expensive and energy costs continue to increase globally. The largest component of the operating cost for mine ventilation is electricity to power the ventilation fans, which may account for greater than 50% of the entire mine electrical budget. Underground mines are being ventilated by peak demand continuously or through VOD systems. *"With the right ventilation controls, a hard rock mine's annual power requirements and costs could be reduced by 30 to 40% compared to a constant air delivery system,"* says Stephen Hardcastle, a Senior Research Scientist with the CANMET-MMSL, part of Natural Resources Canada who specializes in ventilation research. Savings of $1 to 5 million dollars per year are achievable in many deep mines according to Glenn Lyle, R&D Program Director, of the Centre for Excellence in Mining Innovation (CEMI).

4. **Increase worker productivity.** *"Worker productivity and job satisfaction correlate closely with environmental quality. Further, excessive accident rates and worker's compensation rates are a consequence of unsatisfactory as well as unsafe environmental conditions. No mining company today can afford to be lax in its environmental and air-control practices."* writes Dr. Howard L. Hartman, Professor and Author of Mine Ventilation and Air Conditioning.

5. **Reduce capital expenditures.** Delivering ventilation air to the right worker location and at the scheduled time can greatly reduce the total amount of air required to ventilate the mine. By monitoring and controlling the ventilation air, some mines have eliminated the addition of costly air raises, primary or booster fans to extend the mine's life. The savings are typically in the millions of dollars in both time and capital costs.

6. **Meet and exceed worker health and safety regulations.** Almost all mining districts have strict regulations that require a certain airflow rate for every HP of diesel production equipment along with maximum allowable values for toxic or explosive gases. The regulations require accurate record keeping of key ventilation and air quality values to meet the regulations. *"Since mine safety laws allow the use of substitute technologies that improve safety, mine operators used monitoring systems to gain relief from man-power intensive activities such as checking for explosive gases."* states Fred Kissell of the U.S. Bureau of Mines.

   The installation of real time air quality monitoring simplifies and automates much of these tasks.

7. **Reduce injuries and insurance claims.** One thousand one hundred and thirty-one blasting-related injuries were reported by the mining industry during the period 1978-2003 (Verakis & Lobb, 2003) with blast fumes accounting for 8.5% of the injuries. Continuous air quality monitoring could eliminate almost all of the re-entry mine challenges.

8. **Minimize and identify fire and explosive hot spots.** *"The advent of carbon monoxide monitoring systems may have contributed to reducing the frequency of reportable belt fires"* according to W.J. Francart of the US Department of Labour. *"In many other mines, CO systems have been installed in lieu of typical point-type heat sensors because of the increased detection capability of the systems. Many mine operators have determined the additional cost of maintenance and calibration of CO monitoring to be an invaluable investment for improving fire protection for miners and mine property."*

9. **Measure and reduce greenhouse gas emissions.** Both carbon dioxide (CO_2) and Methane (CH_4) are identified as fugitive emissions. When released to the atmosphere, they contribute to increases in greenhouse levels as well as representing a potential economic loss. For example, in coal mines, seam gas is stored within coal seams under pressure. When coal is unearthed, the pressure drops and gas is released. Fugitive emissions from coal mining account for around 5% of Australia's total greenhouse gases according to Australian National Greenhouse Gas Inventory (ANGGI) and underground mining accounts for 61% of this total. Air flow meters and gas sensors can easily be installed on mine ventilation primary fans to provide real time monitoring.

10. **Getting the most out of emerging – and existing – technologies.** According to Hugo Sarrazin and Andy West of McKinsey & Company, January 2011 *"Unsuccessful integration of IT means many companies leave cost savings of up to 15% on the table."* Today mine ventilation air quality monitoring can easily migrate into any modern data historian including OSIsoft's PI historian for easy trending and analysis to capture the remaining low hanging fruit.

Don't wait – Find out why 130+ mines utilize Maestro's equipment to increase mine productivity and safety.

Contact us today

sales@maestrodigitalmine.com