Improved air quality means more time at the face

By Shannon Katary

Vigilante AQS™: The world's first total air quality monitoring station that measures multiple gas concentrations, airflow, wet bulb and dry bulb temperature, and atmospheric pressure with a single digital IP connection.

As mines continue to go deeper underground and embrace new digital technologies, the primary goal is to ensure the safety of the underground miners. Maestro Digital Mine manufactures Internet of Things (IoT) measurement and control instrumentation for the optimization of underground mine ventilation and underground digital networks for last mile of communication. Maestro designs and manufactures products exclusively for the underground mine automation, IT and ventilation sector that delivers energy savings and productivity improvements, while meeting the highest health and safety standards.

Underground mines have challenging environmental conditions, including toxic gases from drill & blast operations or gases given off by the surrounding strata rock. Protecting miners from acute or chronic gas-related health conditions is paramount for any responsible mining company. To ensure this, a variety of sensors transmit real-time data from the underground workings to the surface control rooms. The use of sensors allows miners to return safely to their working areas more quickly, allowing significant productivity increases. However, the sensors are sensitive and require frequent maintenance and calibration to maintain accurate measurements. The previous technology required underground calibrations at each individual location using test gases. However, several physical and environmental challenges prevented accurate and repeatable calibrations of the sensors.

Maestro tackled this vital, life-saving application by designing and developing the Vigilante AQS™, a digital gas sensor that can be calibrated on surface in a stable controlled environment. The digital sensors then can be "hot swapped" by a ventilation technician without the requirement of any sort of underground calibration. Built upon the IoT (Internet of Things), the digital sensors have a complete suite of diagnostics to help determine the health of the complete system and provide maximum system uptime.

"This innovation has allowed our Vigilante AQS™ environmental stations to be installed in some of the deepest mines on the planet," states Michael Gribbons, vice-president of sales and marketing, Maestro Digital Mine. "Prior to this innovation, the underground miners lacked the confidence of the gas readings since there was no practical method of calibrating the sensors or understanding if the sensors were even working. The IoT digital sensors allow this to become a reality. This will result in major productivity improvements by getting the miners safely back to the face quicker."

The Vigilante AQS™ is a third-generation underground mine air quality monitoring station designed with an improved communication platform. The modular design provides extremely flexible integration to any SCADA, PLC, DCS, PLS or HMI system. Whether it is Modbus TCP/IP, EtherNet/IP or RS485 serial based, the Vigilante AQS™ is efficient. An IP address makes this system quick, simple, and economical to match to any ethernet-based network. Simply plug the Vigilante AQS™ into a network switch, configure the settings via the built-in web pages and start measuring. The register maps can easily be paired to most current or legacy-monitoring platforms.

Maestro's Vigilante AQS™ air quality and control systems and MaestroFlex regulators are used in over 100 mines globally as part of a ventilation monitoring and control system. Working with some of the largest mining companies in the world, such as Vale, Mosaic, Nutrien, Glencore, Goldcorp, Rio Tinto, Barrick Gold, Newmont Gold, and BHP, Maestro has developed ventilation solutions that reduce downtime and enable miners to return to the face faster and safer. Visit them online at www.maestrodigitalmine.com. ◆

"ENERGY SAVINGS REPORTED IN THE RANGE OF 25% TO 60% ARE VERY ENCOURAGING AS THEY INDICATE THAT POTENTIALLY HALF OF THE ENERGY SPENT FOR VENTILATION COULD BE SAVED."

— Vale Totten Mine

Great mines think alike.

Vigilante AQS™ Air Quality Station

The **Vigilante AQS**™ accurately measures airflow and direction, wet and dry bulb temperature, gas concentration and air particulates – reducing downtime and enabling miners to return to the face sooner and safer.

Maestro Digital Mine

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