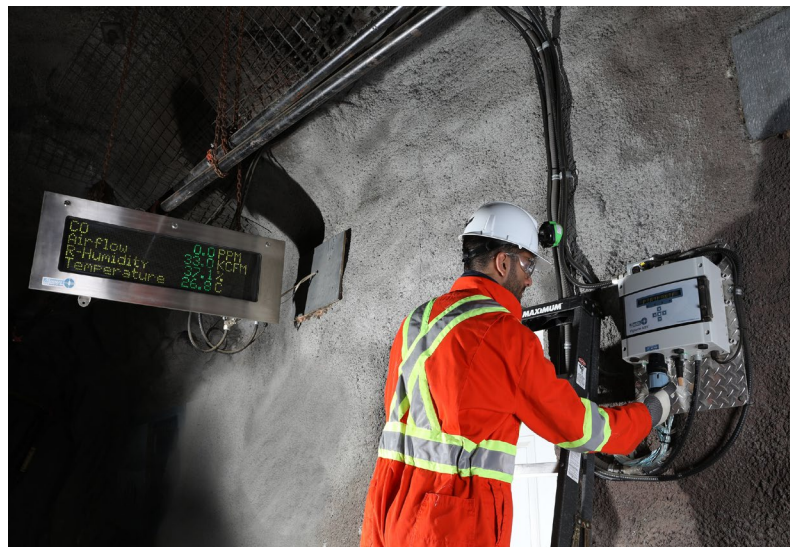


CASE STUDY

Vigilante Air Quality Station™

Return safely and quicker to the face.



Implementing Monitoring, Control and Integration System of Main Fans



Volcan Compañía Minera S.A.A. is one of the world's largest producers of zinc, lead and silver. Volcan is considered one of the lowest cost producers in the industry due to the quality of its ore deposits. Volcan began its operations in 1943 in the heights of the Ticlio pass. All of its operations are located in the Central Highlands of Peru.

Mine automation and the need to embed digital technologies is imminent. Mining faces new challenges and Volcan is at the forefront working with innovative solution providers. Volcan Compañía Minera S.A.A. forward thinking has anticipated this change and has acquired the specialized service of ventilation and automation from Maestro Digital Mine's distributor, the Peruvian Company Airtec S.A.

Maestro Digital Mine expanded into Latin America working with technical experts and experienced distributors to educate and enable our digital IoT solutions. Applying the know-how of more than 50 years dedicated to air engineering in the

manufacture of fans, Airtec S.A. is a specialized company in the field of automation in underground mine ventilation systems. The outcome of success is guaranteeing monitoring and control of the operations inside the mine, having as proof the success cases in national and international mining units.

At U.M. Carahuacra mine, Volcan worked in partnership with Airtec S.A. and Maestro, integrating Maestro's vital and life saving digital technology, the **Vigilante AQS™** air quality stations, to measure environmental conditions in real-time for worker health and safety and to reduce the total installed infrastructure costs.





The Solution

The system's solution was developed using 3 important brands, Allen Bradley, Maestro Digital Mine and Yokogawa. One of the important factors when integrating the systems was the compatibility and scalability that the equipment can provide.

Airtec S.A. worked with Maestro to develop the right solution for the mine. The project was developed using the **Vigilante AQS™** – Air Quality Stations for the measurement of toxic gases. The station was made specifically for the rough underground mine environment, with Nema 4X – IP66 protection.

Vigilante AQS™ Air Quality Stations feature digital gas sensors 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 compensate for barometric pressure and temperature and have a complete suite of real-time diagnostics to help determine the health of the complete system and provide maximum system uptime.

The pressure points located strategically in the fan, were processed by the Yokogawa pressure transmitters and integrated into the system satisfactorily.

The multiple starter board brands found in the field were no problem, since together AIRTEC S.A. and Maestro could count with the converters, communication protocols and in the field developers to turn complexity into a simple and intelligent way.

“Thanks to the more than 50 years of experience in ventilation, the robustness of the equipment, the technology, and the field developers we were able to execute the project in the most safe and efficient way.” Volcan

The Challenge

Integrate three main axial fans located at RB-823 and RB-847 with a capacity superior to 100 KCFM to the SCADA system.

At the time, the fans were not designed to be monitored; likewise, the start boards found in the field are by Variable Frequency Drives (VFDs) and soft starters of different brands.

This project's objective is total integration to the system, generate an installed base for a future VOD (Ventilation on Demand) and the compliance of D.S. 024-2016 with its latest modification D.S. 023-2017. Taking this into account, a consensus on monitoring and control was made regarding the following critical variables:

