



Mining & Tunneling

For over 50 years, Conspec has pioneered the design, development, and manufacturing of environmental and atmospheric monitoring, process control, and safety technology relied upon by industries around the world. With our decades of collaboration with industry leading operations, government research institutes/universities, diverse technology/corporate partnerships, we are able to provide the best protection available for your personnel, property, and equipment.

At Conspec, our team excels in surmounting all the diverse challenges that may arise, even in the most complex underground operations.

Born from collaborations with CANMET, NIOSH, MSHA, Carnegie Mellon University and the Michigan Institute of Technology, diverse technology partnerships and our exacting ISO 9001:2015 certified design and engineering processes, we deliver the "Innovation That Digs Deeper" for continuous improvement and innovation in quality, performance and cost-effectiveness in hardware and software designs for underground mining and tunneling. By deploying independent, third party certification and surveillance of our manufacturing, testing and customer support systems not only to the ISO 9001:2015 standard, but also to the IEC 80079, ATEX Directive 94/9/EC and GB 80079 standards, and independent third party equipment testing and certification of our products to MSHA, ETL-US, C-ETL, IECeX, ATEX, SANS and GB standards, your underground mine or tunnel can be assured of Conspec's commitment to quality in delivering the most reliable performance in manufacturing, integration, customer service, support and training in all our solutions for the harshest underground environment.

Having provided the most reliable monitoring and process control systems for the widest range of underground operations around the world for the past 50 years, mining and tunneling operations have come to rely upon our Atmospheric Monitoring, Ventilation Management, Equipment & Systems Control and Post-Blast Re-Entry Solutions to improve productivity and operational efficiency for increased cost savings, all while maximizing the safety of underground environments for the best protection of personnel, property and profitability.



GREATER PRODUCTIVITY

Conspec products increase productivity for companies through time-saving and safety-enhancing applications. Our monitoring devices measure atmospheric levels and deliver quality values in real time, allowing system controllers and operators to make quick decisions, leading to more efficient working and mine re-entry times.

SAFETY

Our products are designed to ensure safety first. Safeguarding personnel and assets leads to a safer, more efficient work site and better profitability.

LESS DOWNTIMES

Nuisance alarms can cause costly shutdowns, sometimes mine-wide. This leads to lost time and profits. Conspec's advanced alarming capabilities removes this risk, providing reliable advance warning of real hazards, in real time.

24/7 SUPPORT

When it comes to safety and work efficiency, Conspec understands that every second matters. We provide 24/7 support to our customers to ensure that your operation is never stopped or stalled.

EASE OF USE

From manufacturing, to installation, to troubleshooting, to repair and calibration – the full experience of the monitor Conspec provides for you has been specifically designed to maximize the user experience. Our UI has been designed for ease of use and maintenance, no matter who is using it.

RELIABILITY

With 55+ years experience developing monitors, Conspec can design equipment that can withstand the harshest environments. Our products can withstand almost anything, with minimal issues with power, noise, drifting, temperature, and humidity.

COST EFFECTIVE

Our new state-of-the-art monitors combine multiple features into a single all-in-one unit. This will save thousands on the costs of hardware and software. Such a wide array of options for power and communications allows our systems to run on any existing infrastructure.

SCALABLE

Conspec's monitors grow as your needs do. This enables users to start off with single gas, with the option to convert to multi gas and more custom levels as needs increase. Such versatility extends the life and usefulness of our equipment, cementing the reputation for reliability and innovation that Conspec has earned over the years.

MINING & TUNNELING PRODUCTS











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OPTIO™∈

Reliability when every second matters.

- Supports up to 6 sensors, and multiple I/O options for a wide variety of use cases and applications
- Extensive array of power (AC/DC/POE) & communications options (RS-485/RS-232/TRUNK/Ethernet/Wi-Fi/LTE/Leaky Feeder/etc.)
- MSHA approved design for use in Coal Mining, Hard Rock Mining, Tunneling, etc.

OPTIOTM **IS**

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- Extensive array of power (AC/DC/POE) & communications options (RS-485/RS-232/TRUNK/Ethernet/Wi-Fi/LTE/Leaky Feeder/etc.)

COPTIO^{TA}AQS

variety of use cases and applications

- Simple, easy-to-use Multi-Gas Monitor designed to provide air quality related data such as Barometric Pressure, Relative Humidity, Air Velocity, Wet/Dry Bulb Temperature, Carbon Monoxide, Carbon Dioxide, and Oxygen
- Robust, affordable design provides the mine with a complete air quality solution that can easily integrate with almost any existing communications system due to the wide array of power and communications support
- IECEX/ATEX/MSHA IS approved design for use in Coal Mining, Hard Rock Mining, etc.



Reliability when every second matters.

- Easy to use I/O controller designed to control multiple inputs and outputs, either locally or remotely via a front-end system
- Low barrier of entry product to introduce a mine to cost savings projects such as Ventilation Management and Fan Controls
- Multiple built-in I/O, power and communications options for easy installation and maintenance

PLC

- PLC Automation Software capable of supervisory control and data acquisition
- Easy to use and maintain
- Affordable solution for small to mid range operations

SENTURION

Maximizing productivity. Ensuring safety.

- Windows-based software for full supervisory control and data acquisition.
- Suitable for mid to large range operations.
- Easy to use and maintain with full scripting capabilities for automation and controls

KEY APPLICATIONS

VENTILATION MANAGEMENT WITH FAN CONTROLS

- Due to the increase in energy costs along with mounting government pressure to adopt more renewable sources of energy, it is necessary for underground mining operations to adopt more efficient solutions for the management of their ventilation network
- Through a solid, easy-to-program process control system, such as Conspec's Senturion Mine Wide SCADA, and deployment of reliable atmospheric monitors and local control devices, such as Conspec's Optio AQS, Optio Wireless Atmospheric Monitors, and Optio I/O Fan Controllers, it is proven that Ventilation Managers can achieve between 20-50% of ventilation cost savings without the need for costly "Ventilation on Demand" solutions
- By controlling the mine's auxiliary fans based on real-time mine air quality levels, the mine can benefit from tremendous cost savings on their power usage, just by utilizing the auxiliary fans as needed, rather than having them continuously run
- Conspec's Mine Wide Atmospheric Monitoring and Ventilation Management System is a cost-effective option due to the flexibility of being able to deploy the system using a mine's existing Ethernet, POE, LTE, Wi-Fi and VHF/UHF Leaky Feeder Data Communications Infrastructure and using its open architecture MODBUS RTU communications protocol
- This provides Mine Managers the greatest flexibility in installation options and system configurations for maximum coverage of their underground operations and ventilation system
- For an even lower barrier of entry, mines can attach Conspec's I/O controller independently to the fans and utilize the built-in logic to control the fans based on air quality levels at the area. This can provide the mines with a simple, low barrier of entry proof of concept to see how easily they can decrease their power consumption through simple fan controls

POST BLAST RE-ENTRY

- Traditionally, mines rely on a fixed time approach to deal with post-blast re-entry time. This often leads to substantial delays due to the requirements for managers and safety personnel relying on hand-held gas monitors to descend into the stop blasting area to identify any potentially damaged ventilation infrastructure and measure seismic movements at the working face
- This exposes valuable mine personnel to potential seismic and toxic gas risk, and often leads to significant delays in the return to the face to productive use
- Through the selective deployment of Conspec's Optio G/IS Gas Carbon Monoxide (CO) and Sulfur Dioxide (SO2) Gas Monitors over existing data communications infrastructure near the blast area, Ventilation Managers can safely monitor real-time gas dissipation levels in the blasting areas post-blast
- This allows Ventilation Managers to remotely monitor post-blast gas dissipation and remotely identify any damaged ventilation infrastructure. Ventilation Managers can now deploy the necessary fully equipped Repair Teams from surface to repair or replace any ducting and ventilation infrastructure without risking personnel or causing delays, therefore significantly reducing the time to return to the blast face to productive use

AIR QUALITY MONITORING

- Air quality data, such as Oxygen, Carbon Monoxide and Carbon Dioxide levels are key pieces of information needed for the Safety, Ventilation, and Mine Hygiene departments for any mine
- Conspec's Optio Air Quality Station not only provides Oxygen, Carbon Monoxide and Carbon Dioxide levels, but also Relative Humidity, Barometric Pressure, Wet/Dry Bulb Temperatures and Air Velocity
- This provides the mine with a complete picture of the air quality in various areas of the mine



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