TROLEX

ONE LIFE.
PROTECT IT.

AIR XX

PARTICULATE MONITORING RANGE

AIR XX

ADVANCED PARTICULATE MONITORING TECHNONLOGY

Air XX technology has been in development for over 9 years. We've invested hours into building and testing in our purpose-built laser lab and have created a technology that is fundamentally superior to our competitors.

LEADING SAFETY TECHNOLOGY

THE PROBLEM.

Most serious respiratory diseases are incurable.

According to the HSE, approximately 1.4 million people in the UK alone are reporting ‘lung or breathing problems that were caused or made worse by work’.

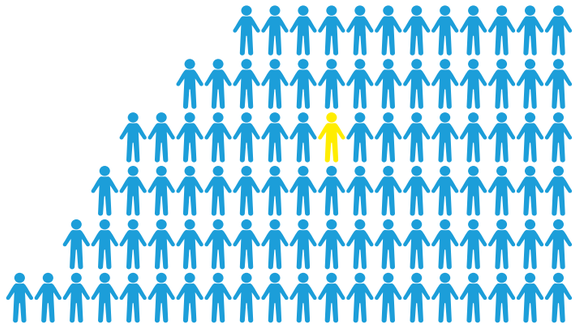
They claim 12,000 UK deaths a year due to occupational lung disease (a figure that rockets to more than half a million deaths worldwide every year).

At an estimated £10 billion each year, it is the fourth most costly disease in the country.

WE’RE ON A MISSION...

Nearly a million people worldwide will die this year from occupational lung diseases caused by inhaling dangerous particulates in the workplace.

That’s 99% of all deaths at work.



We want to protect workers by delivering accurate, real-time, robust and easy-to-use dust monitoring to every single worker exposed to hazardous dusts in the workplace.

No exceptions.

WHY CHOOSE AIR XK DUST MONITORING TECHNOLOGY?

Air XK gives you 24-hour, real-time information about respirable particulate levels on-screen and in greater depth through the **Breathe** software, allowing you to respond instantly to changing levels of dangerous dusts.

All you need is your Trolex Compliance Pack and typically up to 3 minutes each month* to maintain your **Air XK** dust monitor. That's it. Real time for the real world.

User-selectable rolling averages across 15-minute, 1, 4, 8, and 12-hour periods, as well as custom alarm levels. Instant visualisation of trends and incidents through **Breathe** software allowing you to clearly understand your hazards and how to mitigate them.

We hold ourselves and our products to a higher standard, which is why all our tests are verified by independent authorities, and our accuracy figures are stated in comparison to laboratory-grade certified-accurate benchmark materials.

Benefits of real-time dust monitoring.

Safety

Instant alarms, critical incident response, long-term exposure mapping. Protection of ancillary staff and neighbours.

Control

No specialist equipment, staff or third-party surveying required. Immediate response to changing environment.

Cost

Smart ventilation and control. Reduced resource and survey requirements. Improved processes. Better capital expenditure decisions.

Regulation

Meet regulatory requirements with ease – and prove you've done so.

WHAT DO OUR CUSTOMERS SAY?

"The benefit of real-time monitoring for us is ensuring that all our controls are working at their highest level to ensure the safety of our workers and contractors [...] and when we make capital expenditure decisions, we can ensure we target the expenditure on the things that will have the biggest effect on control."

Hanson HEIDELBERGCEMENT Group

Dust monitoring gets much more useful if you can make use of the data your Air XK monitors collect.

Our **Breathe** software makes storing, accessing and interrogating that data quick and simple. This clear, easy-to-use software allows you to configure up to 10 **Air XK** devices simultaneously and remotely, in real time.

All from a single dashboard.

Available for

Scan to learn more about **Breathe** software

AIR XKD DUST MONITOR

THE BIGGEST PROBLEM WITH DUST MONITORS ON THE MARKET TODAY?

They don't work very well when there's a lot of dust around. Which we think kind of defeats the object.

So, we developed the **Air XKD** – the world's first and only open-path, full-spectrum highly accurate, real-time dust monitor for harsh and hazardous environments.

No filters, no pump, no messing around. The **Air XKD** is 5 times more accurate than the current technology, and capable of dealing with 10 times the dust loading.

And with a typical maintenance cycle of 6 to 12 months, you can relax knowing you're providing the most robust and comprehensive particulate monitoring for your people and your business without the high costs and the hassle.

So, everyone can breathe a little easier.

WE NEED TO TALK ABOUT DUST.

Understanding your dust problem is the first step to solving it. Different sizes of dust harm different parts of the respiratory system which is why we designed the **Air XD** to simultaneously monitor every dust particulate from 0.35 to 40 µm, continuously.

DANGERS OF DUST

9 to 30+ µm
Visible dust – e.g., ground limestone – likely to be the least harmful to the human body as the body's defences will intercept and expel it successfully. Some dusts remain harmful at this size category.

5.5 to 9 µm
Invisible to the naked eye – cement dust, iron dust, textile dusts will often fall into this category. Most likely to settle in the nose/throat area and expelled through coughing and sneezing. Can cause irritation and both short and long-term health issues such as asthma if exposure is extended and regular.

2 to 5.5 µm
Baker's dust and coarse clay dust are often in this size category. These dusts will lodge in the main and small breathing passages causing short and long-term health issues such as asthma and bronchitis.

2 µm and below
Many industrial dusts fall into this category including paint pigments, lead dust, metallurgic dusts and fumes, wood dust, carbon black dust and coal flue gas. These particulates will lodge in the bronchi, bronchioles and alveoli causing irreparable damage and leading to potentially fatal diseases such as lung cancer, silicosis, black lung disease and Chronic Obstructive Pulmonary Disease (COPD).

JARGON BUSTER

µm
The unit of measurement used to describe the size of an individual particle. 1 µm or micrometre/micron = 1 millionth of a metre.

PM
Particulates, or more specifically particulate matter (PM) – a mix of solid particles and liquid droplets suspended in air. PM10 refers to all particles of 10 µm and below in a sample.

nm
Short for nanometre. These are particulate sizes smaller than 1 µm. So, the **Air XD**'s ability to detect a range of particulate sizes from 0.38 µm means it can detect particles sized at 380 nm and above.

µg/m³ or mg/m³
This measurement refers to particle density or the amount of particulate matter present in *x* amount of cubic air. It's the measurement most frequently referred to in legislation for respirable particulates. Typically, respirable dust should not exceed 4 mg/m³ – equivalent to 4 teaspoons of flour spread over an entire football field up to a height of 1 m.

USEFUL INFORMATION

Go to www.trolex.com/product/air-xd for more information and references, including dust legislation, dust types and sizes and other useful resources.

SAVING LIVES, MONEY AND TIME IN THE REAL WORLD.

We've helped many customers improve their operational performance with the **Air XD**. Here's an example:

We worked with a large construction company in the UK, installing an **Air XD** at their mineral processing site to investigate the effectiveness of their dust control measures.

By continuously monitoring all present dust they were able to establish that certain control measures were ineffective whilst others had a significant impact on dangerous dust levels. Within a few weeks they were able to:

- Guarantee worker safety in the area monitored by the **Air XD**
- Reduce costs and wastage associated with dust suppression and control measures
- Introduce smart dust control – using control methods only when dangerous dust was present
- Reduce RPE usage by keeping workers informed at all times of dust levels
- Massively reduce maintenance through the **Air XD** units' 6-monthly compliance test

Return on investment from a financial perspective was almost instant. From the point of view of employee safety and corporate responsibility, the returns are priceless.

1› Open path brushed stainless steel duct assembly with anti-static coating minimises dust settlement and allows free flow of air through the unit, enabling the **Air XD** to function in heavy dust loads.

2› No pump, pre-filtering or internal filter so the **Air XD** detects the real content of particulates in the space, giving accurate and reliable readings as dust concentrations change.

3› Multi-parameter detection points and wide scatter-zone chamber allows the **Air XD** to monitor every particle flowing through the unit – giving comprehensive full spectrum readings at all times.

4› Advanced algorithm processes 10,000 particulates per second providing real-time, highly accurate information to save lives and improve efficiency in your process.

AIR XD VS COMPETITOR DUST MONITORS.

We compare the **Air XD** Dust Monitor to competitor fixed dust monitors on the market.

	Trolex	Competitor		
	Air XD	1	2	3
User configurable PM size	●	●	●	●
User configurable particle density input	●	●	●	●
PM measurement range	up to 1,500 mg/m³	up to 150 mg/m³	up to 400 mg/m³	60 mg/m³
Multiple PM measurement size indication	●	●	●	●
Instantaneous live reading display on device	●	●	●	●
Remote data push (4G wireless)	●	●	●	●
Fixed pump	●	●	●	●
Particulate pre-filtering	●	●	●	●

CASE STUDY

AIR XCD: REAL-TIME DUST MONITORING

Company overview

A specialist in developing, manufacturing, and marketing performance additives for the use in the construction, electronics, consumer products, agriculture, automotive, oil and gas industries worldwide.

The main challenge

The drive to protect employees from potentially harmful respirable dusts is a priority for the company. They have identified prevention of exposure as the best form of protection, and so, there is a drive to reduce the time their personnel spend inside the production facility.

Whilst this ensures worker safety, it also generates its own problems; for instance, process leaks aren't detected until an individual enters the production area and observes them. Due to the drive to limit exposure, this can lead to the loss of tons of product or raw materials before the problem is found. This loss of yield comes at a significant cost to the business.

Multiple **Air XCD** units were installed on site, with the aim of avoiding this on-going problem.

How was the Air XCD utilised?

Production at the site consisted of placing 4 vertical mills over 2 different buildings.

In order to ensure that leaks were detected at different stages of the milling process, 14 **Air XCD** units were then installed in different positions around the plant.

This also allowed the customer to easily identify the location of any leaks that were detected. **Air XCD** units were placed on different levels to monitor different parts of the process including the milling, drying and packing/loading areas.

To meet the remote dust monitoring requirements of the customer, the signal and alarm outputs from the **Air XCD** units were connected to a control panel located in the central control room.

To maintain focus on dust generated by the production process rather than naturally occurring dust, the **Air XCD** units were configured to focus on respirable dust in the PM4.25 range. In addition, since most of the dust generated by the process were known to be silica dust, the particle density used in the airborne particulate density calculations was changed reflect this.

Overall, **Air XCD** ensured more accurate dust monitoring of the true airborne particulate density and reduced the potential for false alarms.

ACCESSORIES

TRANSPORTABLE PACK	For use in remote locations, or where power is not available, the **Air XC** Transportable Pack powers up your **Air XCD** 24 hours-a-day without interruption. Our unique twin-battery system with built-in prioritisation, allows you to hot swap and recharge batteries quickly and easily without interruption to your work and without ever powering down. Mounted on a robust, high-quality tripod and powered by dual lithium-ion batteries with a typical run cycle of 30 hours per battery.
COMPLIANCE PACK	A single, easy-to-use pack for all your service, audit, compliance, QA needs and to verify your **Air XCD** in-situ. All you need is around 20 minutes typically once every 6 to 12 months to ensure your **Air XCD** is compliant, fully functional and ready for use. That's it. No filter change, no pump replacement, no return-to-base or complicated calibration routines. Contains the Trolex-approved compliance audit dust samples along with the Trolex-approved compliance audit reusable particulate delivery system.
BREATHE	We're all about keeping it simple. Our dedicated **Breathe** software for the **Air XCD** is a clear, easy-to-navigate, easy-to-access platform for storing, viewing and accessing all your particulate data. It provides you with event logging, Approved Audit Certification and QA verification when required, as well as instant alert messaging through 4G connectivity. **Air XCD** units can be fully configured either in-field using the on-device buttons or using **Breathe**, giving you maximum flexibility and accessibility.
WARRANTY	The **Air XCD** extended warranty package gives you peace-of-mind for 3 years from delivery, guaranteeing you a rapid no-quibble replacement wherever and whenever you need it.

PRODUCT SPECIFICATION

PARTICULATE SENSING PARAMETERS

PM size range	PM1.0, PM2.5, PM4.25, PM10 and TSP
TSP range	Up to 40 µm displayed in mg/m^3 or $µg/m^3$
PM measurement range	0.35 µm to 40 µm over 24 bins
PM measurement capability*	Up to 1,500 mg/m^3
PM continuous operating range**	Up to 25 mg/m^3
PM density	0.8 g/ml to 8 g/ml (default: 1.65 g/ml)
PM measurement units	mg/m^3 or $µg/m^3$
Averaging period	1 minute to 24 hours
Averaging channels	STEL rolling average (default 15 minutes) TWA accumulative average (default 8 hours)
Sampling interval	1 second
Particle count	Up to 10,000 (particles/second)
Sample flow rate	Dynamic (1.2 L/min nominal)
Total flow rate	5.5 L/min (typical)
Particle count accuracy	±5%

*The instrument can define particulate measurement peak trends up to the quantity specified.

**During sustained high dust loading periods, the instrument will report on PM data up to the quantity specified.

Note: Sustained exposure to PM quantities above 25 mg/m^3 will be logged; however, it may affect the operating life of the particulate sensor (OPC).

TECHNICAL SPECIFICATION

Ambient temperature limits	-10 °C to 45 °C
Humidity	0% to 95% RH (non condensing)
Protection classification	Main enclosure, dust and waterproof: IP66 Particulate flow path, cap open: IP22 Particulate flow path, cap closed: IPX6
Housing material	Stainless steel
Net weight	8.2 kg
Cable entries	7 x M20 with removable blanks 1 x M20 USB connector
Power	100 V to 240 V ac 50/60 Hz 9 V to 36 V dc: General purpose 9 V to 16 V dc: Hazardous locations
Supply current	100 mA nominal ac variant 660 mA nominal dc variant
Power consumption	6 W
Inrush current	350 mA peak
Relay outputs	2 configurable (alarm outputs) dry contact Maximum rating 36 V ac/dc 300 mA (internal overcurrent and over-voltage protection fitted)
Maximum rating	2 configurable (real-time or average readings) R1 and R2 with adjustable set points configurable span range Mac max attached load: 280 Ohms
Communications	RS485 data output with MODBUS RTU protocol Ethernet (MODBUS TCP/IP optional) 3G/4G Modem (where specified)
Data download	External USB interface
Data storage	8 GB >10 years (logging interval dependent, default 10 seconds)
User Interface	128 x 64 dot matrix display with RGB backlight Navigation keypad (membrane)
Visual alarms	Display RGB backlight
Indicators	1 x Green high brightness LED: sensor heartbeat 1 x Blue high brightness LED: communications

XXD ONE PERSONAL DUST MONITOR

INTRODUCING THE XXD ONE PERSONAL DUST MONITOR

XXD One: a lightweight, self-contained continuous personal dust monitor with no filters, no pumps, no tubes, and no replaceable parts.

Switch it on, secure it in place and off you go.

XXD One gives you instant alarms for fully customisable short-term exposure limit (STEL) and time-weighted average (TWA) measurements for PM1, PM2.5, PM4.25, and PM10.

With an automatic self-test routine and a maintenance cycle of around a minute every 3 to 6 months, you can make **XXD One** a standard part of the PPE kit for anyone exposed to respirable dust in the workplace.

REAL-TIME PERSONAL DUST MONITORING. FOR EVERYONE.

We believe in keeping it simple.

XXD One is designed to be used every day, in any situation or job role, whatever your level of expertise. It monitors the levels of dangerous dust and lets you know when it's time to act.

If respirable dust is a factor in your business, you need to know about it.

Real-time, continuous dust monitoring is critical in protecting your workforce and improving the efficiency of processes and working practices, intelligently deploying dust suppression, containment and removal systems, and minimising the usage of PPE.

1› Anti-static unrestricted particulate flow-through gives **XXD One** its incredible accuracy and durability – whether detecting microscopic but dangerous or in heavy dust load environments.

2› No pumps, no pre-filtering, no impactor, no tubes and no internal filter – **XXD One** detects the true density of particles in transit, constantly monitoring total suspended particulates in real time.

3› Multi-parameter detection points and a wide scatter-zone chamber allows **XXD One** to monitor every particulate flowing through the unit.

4› The advanced algorithm processes 10,000 particles per second, providing real-time, highly accurate information to save lives.

XXD ONE VS COMPETITOR PERSONAL DUST MONITORS

An independent UK health and safety body carried out a series of tests on 3 **XXD One** units comparing them to the following dust monitors on the market.

	Trolex	Competitor		
	XXD One	1	2	3
Replaceable filter	●	●	●	●
Replaceable pump	●	●	●	●
Calibration required before each use	●	●	●	●
Annual return-to-base	●	●	●	●
Multiple replacement parts	●	●	●	●
Start up in 5 seconds	●	●	●	●
Dynamic real-time concentration	●	●	●	●
Self-contained unit	●	●	●	●

CASE STUDY

DUST MONITORING TECHNOLOGY AND COLLABORATION AT ITS BEST.

Company overview

Reactec have been specialists in workplace health and safety environments for more than 15 years.

The main challenge

Originally focusing on the damaging effects of exposure to vibration, they soon discovered that the most effective way of mitigating workplace risk lies in gathering as much data as possible.

As CEO Jacqui McLaughlin explains,

“The traditional approach to health and safety that says, ‘I can think about a problem, do a risk assessment and as a consequence of that assessment I can make it safe for people’, we prefer to go a step further and engineer out problems.

If we can measure what’s actually happening in the way of risk, then we can make workplaces a safer place to be.”

How was the XXD One utilised?

Starting with wearable dust monitoring technology to measure vibration, Jacqui and her team quickly realised that the data management, hosting and reporting they provided their clients, was a powerful health and safety tool that could also be usefully applied to other workplace risks.

Rather than try to create new technology to measure a variety of risks, Reactec started to look for partners. Experts in their respective risk fields, whose work could be complemented by their data management technology.

“We see Trolex as a leading expert in how to measure dust and what we’re doing is providing a platform that makes the dust data they collect easy to access and meaningful.

We’re turning their data into meaning.”

Jacqui continued:

“We take the data associated with a process so that your records don’t just look like a bunch of numbers, but they tell you about who was doing what and where. And as you build up more data, you can get more intelligence in terms of process and people and where you need to put in your biggest efforts to get safer environments.”

Reactec and Trolex; a marriage made in data and a powerful collaboration that looks set to flourish in the future. Plans are already afoot to take things to the next level with new Bluetooth, IoT data recording and cloud-based analytics.

ACCESSORIES

COMPLIANCE BASE	Supplied as standard with your **XXD One**. The compliance base provides a stand and a convenient base for easy charging of your unit and for connection to **BreatheLITE** software. Combined with the supplied transparent hood the base allows simple and rapid testing to ensure **XXD One** is fully compliant.
COMPLIANCE PACK ONE	A dedicated sample pack for rapid compliance testing of **XXD One**. Simply connect the unit to **BreatheLITE** software and follow the on-screen instructions for a full compliance check in less than a minute. Compliance tests should be carried out typically every 3 to 12 months depending on dust loading and should always be done using the Compliance Pack ONE.
BODY MOUNT KIT	The body mount kit comes with a klick-fast stud, a robust belt loop and a sew-in dock attachment, giving you a variety of options for a secure and non-intrusive solution when using **XXD One** as a wearable dust monitor.
WALL/POLE MOUNT KIT	The wall/pole mount kit comes with a klick-fast stud, screw-on mount and a pole bracket, allowing you to mount the **XXD One** securely and rapidly wherever it is needed – and to still be able to remove it quickly and easily.

PRODUCT SPECIFICATION

PARTICULATE SENSING PARAMETERS

Sensing technology	OPC light-scatter photometer
Particulate measurements	0.35 µm to 40 µm (PM1.0, PM2.5, PM4.25, PM10 and TSP)
TSP range	Up to 40 µm logged in mg/m^3
PM measurement capability*	0.35 µm to 40 µm over 24 bins
PM continuous operating range**	Up to 1,500 mg/m^3
PM density	0.8 g/ml to 8.0 g/ml (default: 1.65 g/ml) Custom particle density profiling
PM measurement units	$µg/m^3$ – logged on-device mg/m^3 or $µg/m^3$ – **BreatheLITE** software
Sampling interval	1 second
Particle count	Up to 10,000 (particles/second)
Flow rate	Dynamic (1.2 L.min nominal)
Total flow rate	5.5 L/min (typical)
Particle count accuracy	±5%

*The instrument can define particulate measurement peak trends up to the quantity specified.

**During sustained high dust loading periods, the instrument will report on PM data up to the quantity specified.

Note: Sustained exposure to PM quantities above 25 mg/m^3 will be logged; however, it may affect the operating life of the particulate sensor.

TECHNICAL SPECIFICATION

Ambient temperature limits	-10 °C to 45 °C
Humidy	0% to 95% RH (non-condensing)
Protection classification	Main enclosure, dust and waterproof: IP66 Particulate flow path (cap open): IP22 Particulate flow path (cap closed): IPX6
Housing material	Polymer coated stainless steel
Net weight	445 g
Data connections	1 x mini USB (maximum cable length – 2 m)
User options	Particulate measurements STEL and TWA alarm setpoints Latching alarms
User interface/alarms	Visual icon illumination (STEL, TWA and battery indications)
Self-test	Sensor hardware, circuitry and battery test on activation Manual self-test during use
Battery capacity	18.72 Wh
Battery run time	16 hours (full health at ambient)
Changing temperature limits	0 °C to 45 °C
Maximum charge current	1.2 A
Product fixing/mounting	Personal mounting clip, klick-fast stud, pole mount or custom bracket
Certification	CE UKCA
On-device data storage	8 GB up to 10 years (log rate dependent) Stored device data can be cleared as required

AIR XS SILICA MONITOR

REAL-TIME RCS DETECTION: IT'S HERE.

For the first time in history, putting an end to silicosis caused by the inhalation of respirable crystalline silica (RCS) in the workplace has become a realistic possibility.

The **Air XS** Silica Monitor, produced with the support of the Centre for Work Health and Safety in New South Wales, delivers highly accurate, continuous, real-time silica detection, giving you all the data you need to protect your workforce, improve your processes, reduce costs and ensure that you not only comply with regulations – but that you can prove it as well.

It's time for everybody to step up and protect their best assets – their people – from harm.

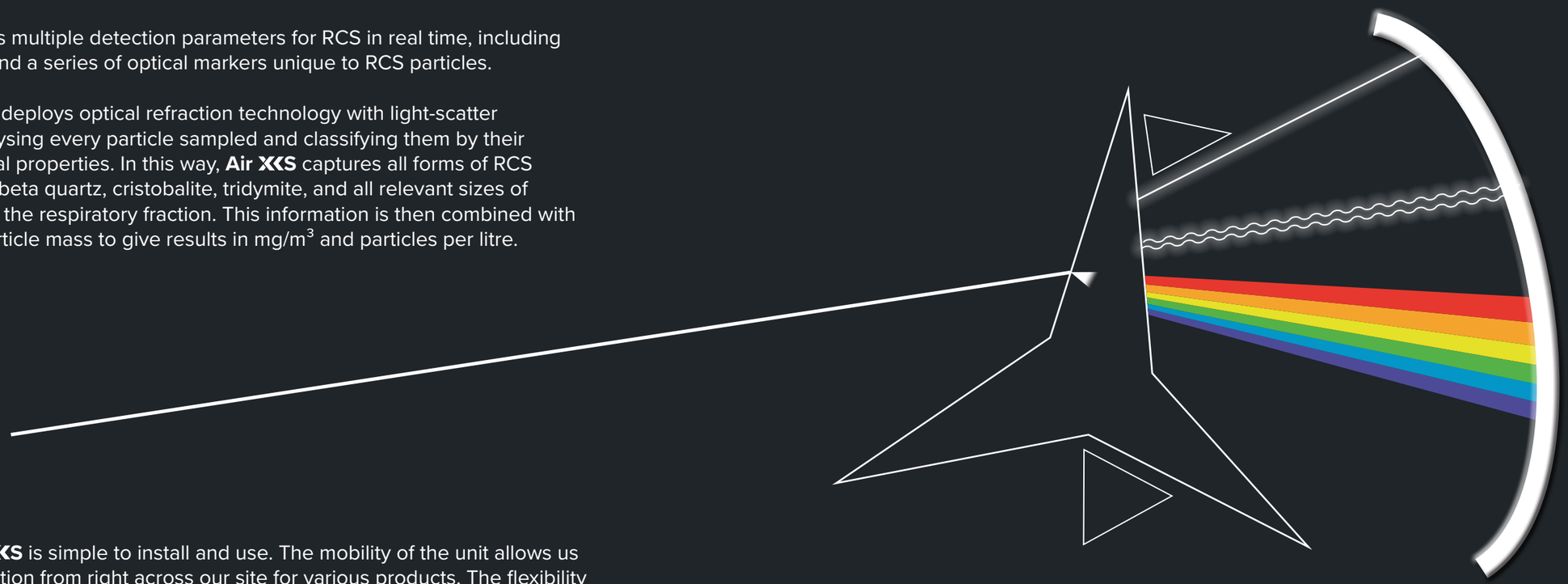
As of now silicosis is an entirely preventable disease.

So, let's get real about monitoring for harmful silica dust.

PIONEERING TECHNOLOGY MADE SIMPLE.

Air XXS examines multiple detection parameters for RCS in real time, including size, symmetry, and a series of optical markers unique to RCS particles.

It simultaneously deploys optical refraction technology with light-scatter photometry, analysing every particle sampled and classifying them by their identifiable optical properties. In this way, **Air XXS** captures all forms of RCS whetheralpha or beta quartz, cristobalite, tridymite, and all relevant sizes of particulate within the respiratory fraction. This information is then combined with an analysis of particle mass to give results in mg/m^3 and particles per litre.



The intensity of reflected light indicates particle size.

Unique differentiated light-scatter patterns demonstrate the asymmetrical nature of particles.

Unique refractive light qualities indicate RCS particles are present.

“The Trolex **Air XXS** is simple to install and use. The mobility of the unit allows us to gather information from right across our site for various products. The flexibility of viewing data in real time next to the plant has helped with both employee and management engagement regarding RCS exposure.

The information that the Trolex **Air XXS** produces has been invaluable in managing our air extraction system across our site. It helps us make informed decisions to ensure that we continue to decrease our employees’ exposure to RCS. It also allows the business to make instant decisions based on the data to ensure everyone is protected and that we invest in the right areas.”

Mike Thompson | QHSE Supervisor | Pennine Aggregates Ltd.

“The benefit of real-time RCS monitoring for us is ensuring that all our controls are working at their highest level to ensure the safety of our workers and contractors [...] and when we make capital expenditure decisions, we can ensure we target the expenditure on the things that will have the biggest effect on RCS control.”

Aurelien Colas | Unit Manager | Hanson Heidelberg Cement Group.

Our Breathe$^+$ high-speed scatter/sizing/crystallinity detection algorithm processes the results in real time and triggers a triple-voting system that positively identifies and distinguishes harmful silica content.

The result:

Accurate, robust, real-time reporting in an easy to use and easy to maintain product.

INDEPENDENTLY VERIFIED.

The **Air XKS** has undergone independent testing to demonstrate that it can accurately detect the quantity of RCS in any given sample.

The tests were carried out by a senior independent scientist and project manager, with over 20 years' worth of experience in polymer chemistry and sensor technologies who has worked for over 10 years at a world leading particulate sensor development company.

The challenge was simple.

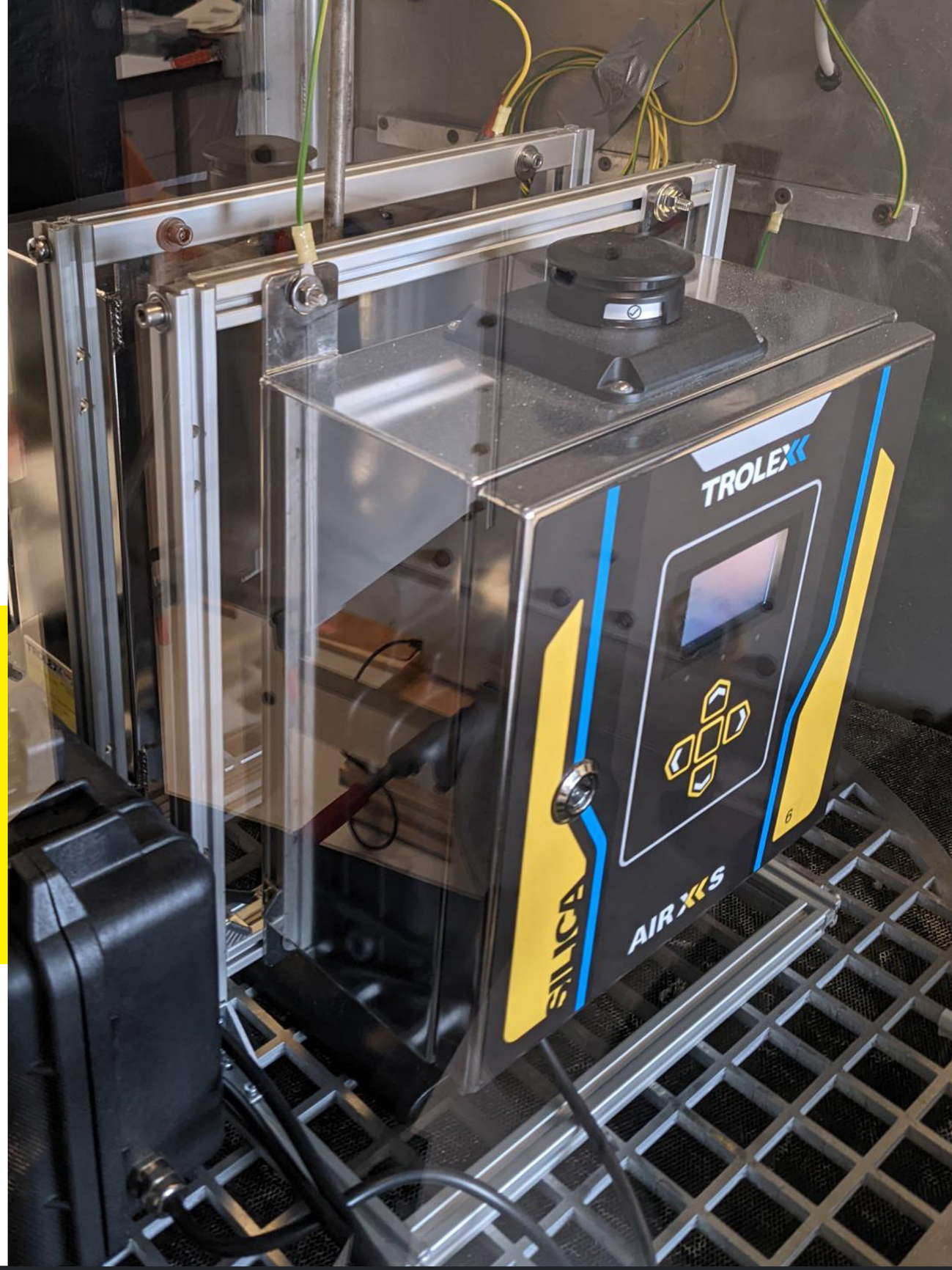
2 samples of dust containing RCS were XRD analysed* multiple times to obtain a percentage RCS content.

The samples were then introduced to 2 **Air XKS** units for sampling across a 4-hour period at both ambient and high temperatures.

THE RESULTS

XRD Analysis (%)	Device-1 (%)	Device-1 (%) @ 35 °C	Device-2 (%)	Device-2 (%) @ 35 °C
25	22.1	24.1	29.6	25.6
50	46.6	60	42.1	59.6

*Whilst XRD analysis is considered the gold standard of particulate analysis, it does not give a fully accurate percentage content of RCS in a sample, so a built-in inaccuracy in the region of ±15% can be assumed.



CASE STUDY

PENNINE AGGREGATES INTEGRATE REAL-TIME RCS MONITORING.

Company overview

Pennine Aggregates are a leading specialist aggregate and mineral processors in the UK. Based in Buxton, Pennine Aggregates supply to a wide range of companies, including ABC Industries as well as Sherwin-Williams, Cemex and Hansons in the UK.

The main challenge

A growing problem in this industry is the threat of occupational silicosis. Silicosis now causes a huge number of deaths across an increasing number of industries, from clothing manufacturing to construction; but the aggregates industry is among the highest risk profiles for this fatal occupational lung disease. This meant that Pennine Aggregates grabbed the opportunity with both hands to trial an **Air XKS** unit to see how they could integrate it into their existing dust suppression processes.

Mark Dickinson, a director at Pennine Aggregates said: “It’s really important to us as a business that we are using every tool that’s available to keep our workers safe and we were really excited to have the chance to see what impact using the first real-time RCS monitor would have on our processes and on workforce morale.”

How was the Air XKS utilised?

In April 2022, we supplied them with an **Air XKS** unit to test their processes across 2 main site locations over a 6-week period. For Pennine Aggregates, it wasn’t that they didn’t have dust suppression in place, but more that they didn’t know exactly how much dangerous silica dust each of their processes were producing.

Mike Thompson, QHSE Manager said: “We were asking ourselves right across the business – is our dust suppression actually getting the right amount dust out of the environment, as quite frankly, before we installed the **Air XKS** on our site we just didn’t know.”

Pennine Aggregates ran the **Air XKS** Silica Monitor on their site over a 6-week period on each of the processes where they had put in place new dust suppression systems.

ACCESSORIES

TRANSPORTABLE PACK	For use in remote locations, or where power is not available, the**Air XK** Transportable Pack powers up your **Air XKS** 24 hours-a-day without interruption. Our unique twin-battery system with built-in prioritisation, allows you to hot swap and recharge batteries quickly and easily without interruption to your work and without ever powering down. Mounted on a robust, high-quality tripod and powered by dual lithium-ion batteries with a typical run cycle of 30 hours per battery.
COMPLIANCE AUDIT PACK S	A single, easy-to-use pack for all your service, audit, compliance, and QA needs and to verify your **Air XKS** in-situ. All you need is a minute, typically every month to ensure your **Air XKS** is compliant, fully functional, and ready for use. That’s it. No complicated set-up or calibration routines, no return-to-base servicing, and no fuss. The Compliance Pack S contains the Trolex-approved Compliance Audit dust samples, along with the particulate delivery system with hood, and swap-out filters for 12 compliance audits.
BREATHEXS	**BreatheXS** software: a clear, easy-to-navigate, easy-to-use platform for storing, viewing, and accessing all your RCS data. **BreatheXS** provides event logging, Approved Audit Certification and QA verification when required as well as instant alert messaging. Units can be controlled either in-field using the on-device buttons or using the **BreatheXS** software, giving you maximum flexibility and accessibility.
WARRANTY	All **Air XKS** products and accessories come with a 12-month warranty. To maintain a valid warranty, carry out a monthly compliance check with the Compliance Pack S.

PRODUCT SPECIFICATION

PARTICULATE SENSING PARAMETERS

Sensing technology	Optical refraction technology (ORT) Light-scatter photometer (OPC)
Particulate measurement	Target RCS identification range 1 µm to 10 µm
Max. typical dust loading*	150 mg/m^3
Continuous peak range	Up to 25 mg/m^3
Displayed data	RCS mg/m^3 Total particles/litre over the selected averaging period
Display resolution	1 µg (1,000th of a mg)
Averaging period	15 minutes, 1, 4, 8 and 12 hours
Sampling interval	10 seconds
Particle count	Up to 10,000 particles/second
Total airflow rate	~ 1.5 L/m (nominal)
Typical RCS accuracy	±25%

*The instrument can define particulate measurement peak trends up to the quantity specified.

Note: Sustained exposure to dust quantities above 25 mg/m^3 will be logged; however, it may affect the operating life and accuracy of the **Air XXS** sensor.

TECHNICAL INFORMATION

Operating temperature	-10 °C to 45 °C
Humidity	0% to 95% RH (non-condensing)
Housing material	PC/ABS – stainless steel
Ingress protection	Main enclosure: IP66 Particle flow path (cap open): IP22 Particulate flow path (cap closed): IPX6
Weight	8.2 kg
Cable entries	3 x M20 with removable blanks 1 x M20 breather gland 1 x M20 USB connector
Nominal power supply	100 V to 240 V ac 50/60 Hz 9 V to 18 V dc
Power consumption	15 W
Communications	RS485 data output with MODBUS RTU protocol
External power output	2 x 15 V 1 A outputs for powering external devices *(e.g. 4G modem)*
Connectivity	**BreatheXS** software
Data download	External USB interface
Instrument data storage	6 GB
User interface	128 x 64 dot matrix display with RGB backlight Navigation keypad (membrane)
Visual alarms	Custom alarm set points Latching/non-latching
Indicators	1 x Green high brightness LED – sensor heartbeat 1 x Blue high brightness LED – communications
Self-test routine	Sensor hardware, circuitry, and communications on ‘power on’ manual self-test during use
Certification	CE compliant

AIR XXD
DUST MONITOR

ITEM	PART NUMBER
110 V to 240 V ac *(general purpose)*	TX8005-00-01-01-01
9 V to 36 V dc *(general purpose)*	TX8005-00-02-01-01
IECEx 12 V dc	TX8005-06-02-01-01
ATEX 12 V dc	TX8005-19-02-01-01
Extended warranty *(total 3 years)*	EXTWARRANTY2
Breathe software *(per annum/per user)*	P5628.800.001
Compliance Audit Kit *(with samples)*	P5628.4000
Compliance sample pack	P5628.4001
Transportable Pack	P5628.5000
Additional battery	P5642.5000

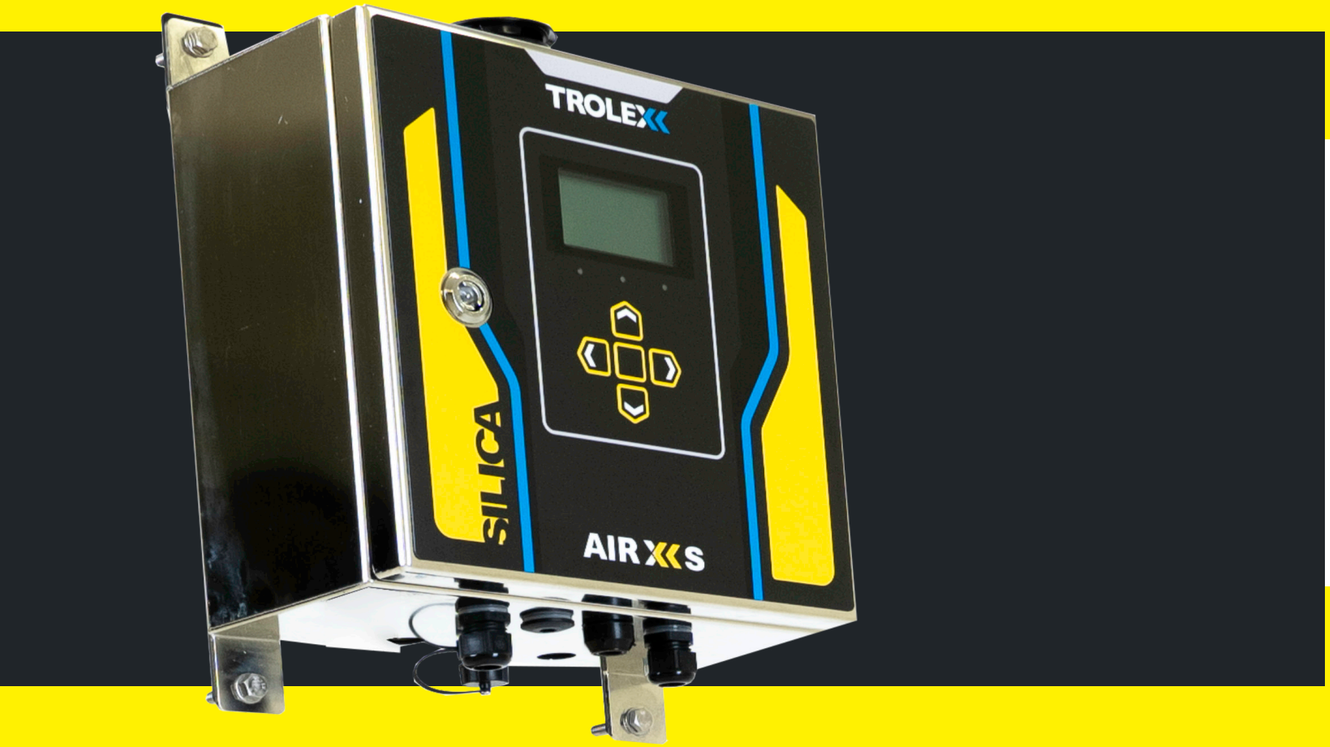
Scan to learn more about **Air XXD**

XXD ONE PERSONAL DUST MONITOR

ITEM	PART NUMBER
XXD One with alligator clip	TX8060.00.01
Body mount kit	P5644.4001
Pole/wall mount kit	P5644.4002
Compliance Pack ONE *(x1)*	P5644.4003
Compliance Pack ONE *(x12)*	P5644.4004
Cab charger	P5644.4005

Scan to learn more about **XXD One**.

AIR XXS SILICA MONITOR



ITEM	PART NUMBER
Air XXS Silica Monitor	TX8100.00
Transportable Pack	P5628.5000
Compliance Audit Pack S	P5633.400
Additional battery	P5642.5000
BreatheXS software *(per annum/per user)*	P5633.800

Scan to learn more about **Air XXS**.

GET IN TOUCH

We work with more than 20 of the world's leading corporations across nearly 50 countries. While our core territories include Europe, the UK, the USA, Australia, Russia, Turkey and Canada, Trolex has a global reach, supporting businesses anywhere in the world.

Questions about our safety technology? Our distribution? Our sales?

Contact us to request a demonstration of our real-time particulate monitors or find your nearest distributor at www.trolex.com/find-a-distributor to find a distributor near you.

DISCLAIMER

The information provided in this document contains general descriptions and technical characteristics of the performance of the product. It is not intended as a substitute for and is not to be used for determining suitability or reliability of this product for specific user applications. It is the duty of any user or installer to perform the appropriate and complete risk assessment, evaluation and testing of the products with respect to the specific application or use. Trolex shall not be responsible or liable for misuse of the information contained herein. When instruments are used for applications with technical safety requirements, the relevant instructions must be followed.

All pertinent state, regional, and local safety regulations must be observed when installing and using this instrument. For reasons of safety and to help ensure compliance with documented system data, only Trolex or its affiliates should perform repairs to components.

Trolex Ltd. reserves the right to revise and update this documentation from time to time without obligation to provide notification of such revision or change. Revised documentation may be obtainable from Trolex.

Trolex Ltd. reserves the right, without notice, to make changes in equipment design or performance as progress in engineering, manufacturing or technology may warrant.

TRADEMARK

At Trolex, we save lives.

We believe that no person should risk their life to earn a living.

Our aim is to become the world's leading name in health and safety technology, through pioneering products that provide real-world benefits to our customers, whenever workers operate in hazardous environments.

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