



# TOGETHER

ECOTECH'S MAGAZINE ABOUT ENVIRONMENTAL MONITORING

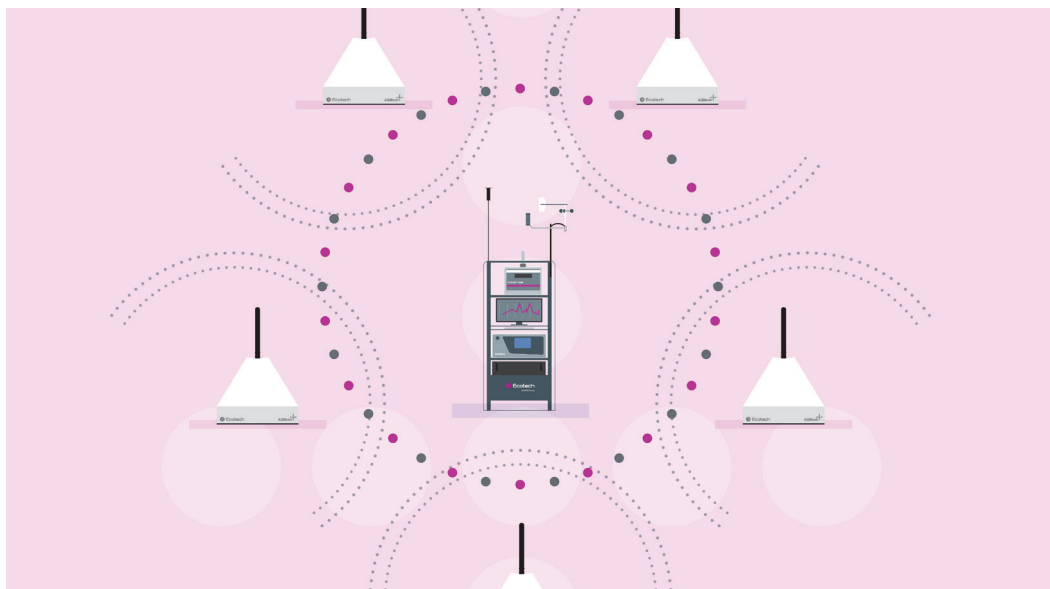
## 2019 Issue 6

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TOGETHER WE CREATE SOLUTIONS  
THAT SHAPE THE FUTURE



ACOEM Group



## AQMesh – Transforming the Way Smart Cities & Industries Monitor, Report & Adhere to Air Quality Standards & Regulations



*Main pic: Strategically placing a high number of ECOTECH AQMesh pods around and between a low number of reference quality AQMS stations delivers hyperlocal monitoring results.*

*Pic above: AQMesh is the tried and tested name in small sensor technology for commercial use. AQMesh is manufactured in the UK and distributed exclusively in Australia and India by ECOTECH.*

**What happens when you combine the best in class and most respected small sensor technology with the most trusted global supplier of reference quality Air Quality Monitoring Systems (AQMS)?**

The answer is ECOTECH AQMesh – the perfect combination of hyperlocal small sensor environmental monitoring, and the precision and reference-quality accuracy of ECOTECH's Serinus® range of gas analysers – used and recommended by environmental agencies, researchers and industries in 80+ countries.

While many small sensor air quality monitoring devices have entered the market, AQMesh is the 'tried and tested' small sensor system that has the backing of environmental agencies and university researchers.

Since 2013, AQMesh has been tested and used in commercial applications in more than 30 countries around the world.

AQMesh is designed to augment and enhance the ability of smart cities and businesses to pinpoint hyperlocal environmental trends in real time.

Its scalability and simplicity of installation means that even the smallest variations in air quality can be easily identified.

“Although AQMesh works well in isolation, international pollution and emissions regulations require reference-quality reporting of data,” noted James Agius, ECOTECH Head of Global Sales & Marketing.


“This is where ECOTECH gas analysers and AQMS come in. AQMesh sensors support and localise the environmental data captured by reference quality ECOTECH gas analysers. When used together, ECOTECH AQMesh provides a holistic yet detailed view of the air quality of any given area and produces the legally required reference-quality data,” he added.

### Hyperlocal Monitoring & Trend Analysis

Strategically placing a high number of ECOTECH AQMesh pods around and between a low number of reference quality AQMS stations delivers hyperlocal monitoring results.

“Practical and cost-effective, ECOTECH AQMesh greatly increases the spatial resolution of air quality monitoring networks and allows for hyperlocal measurement and trend analysis of human exposure to air pollution,” said Matthew Cook, ECOTECH AQMesh Sales Manager.

ECOTECH, part of the ACOEM Group, is known for its superior design, manufacture, installation and maintenance of air quality monitoring equipment. With over 40 years’ experience, ECOTECH is an environmental monitoring pioneer and its Serinus® gas analysers have garnered a global reputation for excellence in providing reference quality data.

To find out more about ECOTECH AQMesh visit [www.ecotech.com/aqmesh](http://www.ecotech.com/aqmesh) or contact Matthew Cook on +61 (0)418 558 011 or [matthew.cook@ecotech.com](mailto:matthew.cook@ecotech.com) 

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**ECOTECH  
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increases  
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## Spectronus™ Sets Sail on Summer Antarctica Research Expeditions

*Main pic: The Aurora Australis in Hobart prior its departure to Antarctica, carrying out research into atmospheric aerosols and greenhouse gases.*

**ECOTECH's Spectronus™ gas analyser is an integral part of an Australian multi-university research project to study how aerosol gases form in clean atmospheres.**

In November 2018, the Spectronus™ – the first multispecies greenhouse and other trace gases analyser – was on board Australia's Antarctic icebreaker, the Aurora Australis, as it cruised the Southern Ocean from Hobart to various Antarctic and sub-Antarctic stations.

Over four voyages throughout the summer, research equipment housed in a purpose-built "AIRBOX" was on the Aurora Australis measuring and provided data on aerosol gases.

The Spectronus™ was specifically measuring small variations of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and carbon monoxide (CO) during latitudinal changes as the ship sailed.

The Australian Research Council (ARC) funded the instrumented atmospheric chemistry container “AIRBOX”, and has funded a multi-university research grant to conduct a study focused on aerosol formation, and the mechanism of how these gases form in clean atmospheres in the Antarctic region.

The research, led by Dr Robyn Schofield, from the University of Melbourne, was conducted in association with the University of Wollongong and other academic partners.

### Investing in research to solve environmental problems

Designed and created by Prof. David Griffith from the University of Wollongong’s School of Chemistry & Centre for Atmospheric Chemistry, Spectronus™ is the result of more than two decades of research.

It is manufactured under an exclusive licence by ECOTECH and continues to evolve and be upgraded with expert guidance and input from Prof. Griffith, who also provides ongoing technical support for customers.

Based on Fourier Transform Infrared Spectroscopy (FTIR), the Spectronus™ is the only analyser with the ability to quantify real-time measurements of multiple gases and isotopes simultaneously, within the single instrument.

It has been adopted by research scientists, universities and government-funded agencies around the world for its precision and holistic approach, revolutionising the way that greenhouse and trace gases are analysed both in the field and in the laboratory.

“Precision monitoring instruments like Spectronus play a significant role in the success of research projects like this,” said Prof. David Griffith.

“ECOTECH’s involvement and ongoing collaboration with the scientific community helps us identify and make a positive contribution towards solving environmental problems,” he added.

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Pic above: Prof. David Griffith installing the Spectronus™ aboard the Aurora Australis.

Pic top: Spectronus™ is the only gas analyser on the market with the ability to make real-time high precision measurements of multiple gases and isotopes simultaneously, within the single instrument.

Its precision values for gas measurement exceed the standards of the World Meteorological Organisation (WMO).

Its unique ability to measure four gases and two isotopes at once ensures:

- One set of calibrations
- Low cost of ownership
- Only one operator required
- Only one piece of software for all measurements
- Ease of operation.

As a multi-species gas analyser, Spectronus™ measures:

- Nitrous oxide ( $N_2O$ )
- Methane ( $CH_4$ )
- Carbon monoxide (CO)
- Carbon dioxide ( $CO_2$ )
- Delta Carbon 13 isotope ( $\delta^{13}C$ )
- Delta Oxygen 18 isotope ( $\delta^{18}O$ ).

(Continued from page 5)

Spectronus™ has been utilised in a number of other pioneering maritime and ship-based environmental studies, including:

- providing data on  $CO_2$  levels during a 2014 circumnavigation of Australia;
- another aerosol study of the Daintree River region of Queensland in 2016, and
- a short campaign in 2018 by the Royal Australian Navy to study aerosol formation around Garden Island, in Western Australia to assist with visibility for submarines.


“Spectronus™ latest expedition is another example of the close relationship that ECOTECH shares with the academic and research sector,” commented Felicity Sharp, Head of ECOTECH Europe. “We recognise the importance of participating in ongoing research and welcome the opportunity to support Prof. Griffith and his team at the University of Wollongong,” she added.

### ECOTECH's monitoring suite providing global solutions

This is not the first time that ECOTECH instruments have been used during maritime expeditions to study atmospheric and environmental conditions. In 2017, ECOTECH was proud to partner with some of the world's most respected environmental research institutions to study air quality and climate change on the 40-day AQABA expedition around the Arabian Peninsula.

ECOTECH supplied the expedition with its Aurora® 3000 Multi Wavelength Integrating Nephelometer, the Serinus® 60 Direct Nitrogen Dioxide Analyser and its next generation Congrego® Data Logger.

ECOTECH monitoring equipment collected data on the chemical composition of the atmosphere and supported ongoing gas-aerosol interaction research and studies on the atmospheric chemistry of dust, sea salt and other natural emissions' interactions with air pollution.

Learn more about Spectronus™ at [www.ecotech.com/spectronus](http://www.ecotech.com/spectronus) or contact Felicity Sharp on +33 4 72 52 48 00 or [felicity.sharp@ecotech.com](mailto:felicity.sharp@ecotech.com) 





## **o1dB Reinforcing Their presence in Asian Airport Business**

**ACOEM group is delighted to announce Airports of Thailand (AoT) renewed their trust in o1dB airport solutions.**

After Phuket airport in 2014, ACOEM was chosen to supply a full airport environment management system to Bangkok and Chiang Mai airports simultaneously. A total of 27 o1dB CUBE smart noise monitoring stations and two o1dB Aerovision licences will be deployed at AoT Airports.

These systems will help AoT to prepare the future extensions of both airports, with new terminals and new runways. Those extensions are key part of the Smart Cities agenda the Thai government put in place.

Aerovision and CUBE features and performance, as well as the excellent customer experience provided to AoT by ACOEM Asia and o1dB's distributor in Thailand, AM Acoustic, were instrumental in this success.

For more information, please visit [www.o1db.com](http://www.o1db.com) 

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**A total of 27  
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Thailand.**  
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## European Customer Chooses Serinus® 60 Gas Analyser Based on More Than Just Product Excellence

*The Serinus 60 NO<sub>2</sub> analyser with Cavity Attenuated Phase Shift (CAPS) spectroscopy technology.*

*CAPS technology allows direct measurement of nitrogen dioxide (NO<sub>2</sub>), rather than an indirect calculation from a chemiluminescence analyser.*

*Using a modulated blue LED light source, the detector measures the phase shift attributable to the level of NO<sub>2</sub> in the measurement cell over an average path length of several kilometres.*

**Why choose an ECOTECH direct NO<sub>2</sub> gas analyser over another brand? For one Dutch authority, it was ECOTECH's reputation, past performance in a research context and user-friendly manuals that won them over.**

Being an innovative market leader is important, but government agencies, researchers and industries that are committed to monitoring air quality are after more than just a quick fix.

They want to be assured that the product has been tested in similar applications, that the equipment will fit their exact needs and that they won't need overly complicated training and technical manuals in order to operate it.

They also expect knowledgeable distributors, not just sales people, and the guarantee that their equipment will be maintained and serviced by product experts.



### **Distributors understanding their customers' needs**

A recent example of what sets ECOTECH apart from other manufacturers comes from the BeNeLux (Belgium, the Netherlands and Luxembourg) region.

Long-time Belgium-based ECOTECH distributor and environmental equipment specialists, European Tech Serv (ETS) have been providing various monitoring instruments to the Royal Netherlands Meteorological Institute (Koninklijk Nederlands Meteorologisch Instituut – KNMI) for several years.

As the Dutch national forecasting service, KNMI is responsible for weather forecasting and monitoring of climate change and seismic activity from its headquarters in Utrecht, Netherlands.

KNMI was in need of an analyser that could directly measure vertical profiles of nitrogen dioxide (NO<sub>2</sub>) with high time resolution. Accurate in-situ measurements were necessary as a reference to calibrate their own lightweight NO<sub>2</sub> sensor – which was mounted on a weather balloon – to validate air pollution satellite measurements from space.

### **ECOTECH's respected reputation in the research sector**

After speaking with the expert team at ETS, KNMI decided to undertake its own research and found a scientific paper detailing the role that Serinus® 60 had played in a groundbreaking maritime air quality and climate change project in the Arabian Basin (AQABA) in 2017.

The AQABA project assembled a dedicated international team to conduct critical research into the effects of air pollution in the region. Drones were deployed from the research vessel to collect data on the vertical structure of the lower troposphere, simultaneously characterising photochemical and aerosol processes.

KNMI reached out to the author of the paper to gauge their opinion on the Serinus® 60 and ECOTECH as a company.

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KNMI [Royal  
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Meteorological  
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recognised that  
[the Serinus® 60]  
was in fact the  
best instrument  
to meet their  
needs.”

(Continued from page 9)

Current European Union (EU) standards for reference quality NO<sub>2</sub> monitoring are based on older chemiluminescence technology (like that used by ECOTECH's Serinus® 40).



*Do it directly with the Serinus® 60 gas analyser.*

The EU has yet to adopt new regulations that factor in newer technology like Cavity Attenuated Phase Shift (CAPS) spectroscopy, the basis of the Serinus® 60.

CAPS technology allows direct measurement of NO<sub>2</sub>, rather than an indirect calculation from a chemiluminescence analyser.

The Serinus® 60 has yet to gain EU accreditation, however KNMI recognised that it was in fact the best instrument to meet their needs.

Learn more about the Serinus® 60 at:  
[www.ecotech.com/serinus-60](http://www.ecotech.com/serinus-60)





## Integrated Noise – Custom Solutions for Environmental Monitoring


Monitoring can mitigate and significantly reduce the financial and non-financial risk associated with non-compliance to relevant standards and regulations.

Depending on your project requirements, ECOTECH's suite of o1dB smart noise and sound vibration analysers can be fully-integrated into an ECOTECH environmental monitoring station to create a cohesive multiparameter environmental monitoring system.

### Accurate monitoring in all conditions

ECOTECH Noise Systems can be housed in a variety of different shelter types and sizes. All-weather, temperature-controlled robust ECOTECH shelters are designed to withstand extreme weather conditions. With the o1dB CUBE™, external antennas allow communication even in these challenging environments.

The ability to mount the monitoring equipment in a range of enclosures allows measurements in a range of conditions.

To learn more about integrated noise, contact Mark Neaves on +61 (0)7 3393 7407, email [mark.neaves@ecotech.com](mailto:mark.neaves@ecotech.com) or visit [www.ecotech.com/integrated-noise](http://www.ecotech.com/integrated-noise) 

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## Extinguishing Risk With Fire Safety Training

*Main pic: HSE Coordinator Sebastian Wojtas (fourth from left) leads ECOTECH Melbourne staff in annual fire safety training.*

**When an Australian summer is in full swing, high likelihood of drought, climate extremes and bushfires means that fire training is more important than ever. Correct guidance to extinguish a fire could mean not only the lowering of risks and continued safety of everyone in the building, but could also be the difference between life and death.**

Summer drastically increases the risk of bushfires. Awareness, knowing what to do when a fire starts, and having the confidence to act quickly could save lives in the home or workplace. Fires escalate very quickly, and a fast response time is integral to reducing overall risk. This means knowing the basics of fire safety and what creates the fire in the first place.

There are different ignition and fuel sources for fires, however they all come back to the Fire Safety Triangle – oxygen, heat and fuel all need to be present. Fires have

an overall negative effect on the environment, not only for flames destroying native flora and fauna, but also for potential smoke inhalation and overall air quality. Another major threat to the environment is waste water and residue from larger fires. This runoff can flow into storm water drains and heavily impact local water quality.

### **Awareness and knowledge increases confidence**

Warden training is an integral part of encompassing fire safety. The responsibilities of a fire warden include assessing the situation, keeping calm under pressure, leading people out of the building to a designated area, and showing leadership in challenging situations. Staff in the warden's area should also know about the role, even if they are not designated, so should the designated warden not be in the vicinity, others can step in as needed.

Internal training is run in person at ECOTECH once a year in Australia and India. It is topped up with videos and reading for further education, however face to face is important, as it shows wardens and staff how to use tools at their disposal, such as extinguishers, and get first-hand experience. Getting a feel for using these items, and having a group of people all on the same wavelength increases the chance of a good outcome in case of emergency.

Extinguisher training includes giving a snapshot on what all different types of fires look and act like, and trialling out a CO<sub>2</sub> on a real fire. This gives participants real experience on how to handle a situation.



*ECOTECH Product Assembly Technician Jeremiah Banquesio puts out a blaze.*

*(Continues on page 14)*

“  
**Knowing what to look for and how to identify [a fire] is relevant to not only business, but also everyday life, as fires can happen anywhere.**  
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(Continued from page 13)


### **Mitigating dangers in the workplace**

Fire drills are an important part of mitigating risk in the workplace. Knowing what to look for and how to identify it is relevant to not only business, but also everyday life, as fires can happen anywhere (e.g. car fire caused by leaking fuel lines). Ignition sources next to fuel sources, such as a powerpoint next to a ream of paper, or even dry grass on a hot day, can set off a powerful blaze if not controlled.

Paper (in office environments) and kitchen (appliances out of date or not being tested regularly) are the most commonly occurring fires in the workplace. Electrical fires are also increasing (such as broken or frayed phone chargers). Other significant risks in the workplace include gas bottles and use of old powerpoints that trip out by a spark running through them. However, previously common fires, like the flammable gas type, are decreasing thanks to better technology such as auto shut-off valves.

Different extinguishers are used for different fires. Chemical powder is good for almost all fires, except it is corrosive. CO<sub>2</sub> carbon dioxide extinguishers are used for electrical fires, and cools and cleans without damaging items. However, selection could be made on urgency and necessity if there are time restraints.

ECOTECH holds Australian Standard Occupational Health and Safety Management Systems AS 4801.

If you would like to know more about Health and Safety systems at ECOTECH, please visit [www.ecotech.com/hse-management-systems](http://www.ecotech.com/hse-management-systems) 



*Fire Safety Triangle – all three of these elements need to be present to start a fire, however if one element is removed, the fire should be able to be put out.*



# START BUILDING smarter cities

## Stop Wishing, Start Doing


For millions of people around the world just like you, making a New Year's resolution is a tradition we share.

For some it's a bit of harmless fun. For others the tradition is the perfect moment to stop something in their lives and start doing something new, something different, something better.

What will you STOP wishing and START doing in 2019? At ECOTECH, we believe together we create solutions that shape the future. What will you do for the future? What will you do to reduce your environmental impact?

Let 2019 be the start of a brighter future for:

- breathing cleaner air
- building smarter cities
- connecting smart industries
- reducing our environmental impact
- contributing to a safer world.

For more information visit [www.acoemgroup.com](http://www.acoemgroup.com), and watch the 40 second "Stop Wishing Start Doing" video. 

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