



*busiest show in 15 years!*



AQE delegates contributed to many lively debates

**Air quality is obviously uppermost in everybody's mind as AQE continues to break attendance records. "The show originally began as a small conference and exhibition in 2003,"** explains organiser Marcus Pattison.

**"The focus in those days was MCERTS for industrial stack emissions, but the event has grown beyond all recognition and now also encompasses ambient air quality, fugitive emissions, occupational safety, and emissions from vehicles, shipping, combustion sources and waste. In fact, it is hard to think of any process affecting air quality that isn't monitored, regulated and covered by one of the many conferences, seminars and workshops that ran at AQE 2018."**



Marcus Pattison  
AQE Organiser

2018 also saw AQE combine with its sister event WWEM (Water, Wastewater & Environmental Monitoring). With both events running in the same place, visitors with environmental responsibilities were able to pass freely between the two events and around 80% of visitors did so. The synergy that this created was a major factor in the 19% growth in visitor numbers at AQE 2018.

**The STA (Source Testing Association) Conference** focused on the Medium Combustion Plant Directive (MCPD), which came into force on 20th December 2018. The MCPD applies to generators and plants between 1 and 50 MW (net rated thermal input) and an impact assessment has estimated that between 30,000 and 35,000 of these plants are currently operating in the UK alone. The estimated number of MCPs in the EU is around 143,000.

From 20th December 2018 new UK plants need to be registered or have obtained a permit and comply with emission limit values (ELVs) for sulphur dioxide, oxides of nitrogen (NOx) and dust. The ELVs to be applied are dependent on plant, fuel type and size. Existing plants (i.e. those which were in operation before 20th December 2018) must be registered or have obtained a permit. They must comply with the requirements from 2024 or 2029, depending mostly on size, with the aim of full implementation by 2030.

Covering all perspectives in the power generation sector, the MCPD Conference speakers included John Henderson, who leads on the implementation of the MCPD for the Environment Agency, David Graham from Uniper, Stewart Davies from Viridor, and the Combustion Engineers Association.

The Environmental Industries Commission (EIC) seminar focused on solutions for the management and delivery of Clean Air Zones. Dan Williams from Johnson Matthey set the scene by describing

the work of the EIC Air Quality Working Group, and this was followed by an update on feasibility studies, CAZ cost/benefit analysis and technology solutions from Guy Hitchcock, Knowledge Leader to CAZ for Ricardo Energy & Environment. Jim Mills from Air Monitors then described the measurement and reporting of air quality in CAZs, including the role of low cost sensor networks.

Following a presentation on Euro 6 Regulations and enforcement, Mark Cooper, representing HJS Emission Technology, described the retrofit of heavy duty diesel vehicles. With a focus on taxis and light vans, Holly Jago from Calor Gas/Autogas then explained the role of LPG, and Gerard Chaustow of Try EV discussed issues relating to electric vehicles and charging points. Following a similar theme, Alan Barnard of Green Urban Solutions described emissions reduction through retrofit on construction equipment, and Mo Saqib from Dearman described the benefits of innovative technology in transport refrigeration units.

Mark Penny from Energy Solutions explained the advantages of temporary hybrid power generation on construction sites, and in the final presentation, William Tebbit from Green Biofuels presented a synopsis of alternative fuels including test results from real-world testing.

### **IAPSC conference (Investigation of Air Pollution Standing Conference)**

The presentations began with a look at rapidly evolving techniques for the sensor-based monitoring of ambient air pollution, which is generating significant interest among UK Local Authorities. Speakers Dr Mikko Laakso (Vaisala) and Brian Stacey (Ricardo Energy & Environment) outlined the current situation, and gave

some examples of where such techniques can be successfully used. However, Brian added a note of caution; in his opinion, while sensors are capable of producing results that are stable over the period of measurement and can be used for identifying 'hot spots,' they do not yet offer the level of proven accuracy and traceability that is needed to robustly monitor compliance with air quality objectives.

Abhijith Kooloth Valappil and Arvind Tiwari (Global Centre for Clean Air Research, University of Surrey), Professor David Fowler (Air Quality Expert Group) and Dr James Levine (Birmingham Institute of Forest Research, University of Birmingham) provided their perspectives on Green Infrastructure and its potential usefulness in managing urban air quality. Speakers emphasised that the best way to improve urban air quality is to reduce emissions at source: the ability of vegetation to act as a 'sink' for pollutants is limited and even large numbers of extra trees would remove relatively little pollution from the air. Nevertheless, carefully-located Green Infrastructure has a role to play in reducing public exposure by influencing dispersion patterns.

Aare Puussaar from the University of Newcastle gave a presentation on the ground-breaking SenseMyStreet toolkit, which enables citizens and local groups to commission sensors in their area and generate useful data. Dr Harriett Richardson from the National Centre for Atmospheric Science (NCAS) described the work that NCAS has undertaken in this area - including Clean Air Day, work at festivals and in schools. Finally, Duncan Urquhart talked about AECOM's work on the development of interventions to improve air quality in Liverpool, and Dr Guy Hitchcock of Ricardo Energy & Environment outlined some of the challenges that arise in the development of a Clean Air Zone - including



Exhibitors provided practical demonstrations



Great opportunity to network with regulators, operators and suppliers



AQE Conferences addressed a wide variety of hot topics

complex modelling, understanding behavioural responses to a scheme and interpreting the data to support effective decision making.

The **Renewable Energy Association Conference** was titled: Understanding emission risks from Organics Recycling activities. With the recent release of the Best Available Techniques for the waste sector, this was the ideal time to address issues relating to emissions from biowaste; such as odour thresholds and perception, and the science behind composting and process optimisation.

A programme of free technical **Workshops** ran throughout both days, offering visitors the opportunity to learn more about the latest methods and technologies on show. The workshop presenters included experts from instrument manufacturers as well as organisations such as NPL and TÜV. A wide variety of themes were addressed covering both industrial emissions and ambient air quality. Presentations included real-time particulate characterization, air quality monitoring using mesh networks with real-world examples, and novel technology behind a new national monitoring capability. Speakers also addressed the identification of pollution hot-spots from vehicles in urban environments, as well as future trends in ambient air quality monitoring and the role of standardisation.

The industrial emissions presentations included an analysis of historical measurements of CO, NO<sub>x</sub>, TOC and SO<sub>2</sub> in UK and German proficiency tests in stack simulators, as well as the accuracy of NO<sub>2</sub> emissions measurements and the effect of PM size distribution on CEMS response.

## AQE 2018 International Exhibition

Many of the exhibitors launched new products and services, some of which are outlined below.

As a sensor developer and manufacturer, Alphasense welcomed high numbers of both visitors and exhibitors to its stand. "The event surpassed our expectations," commented Arthur Burnley, "AQE provided us with a great opportunity to meet many of our existing customers and to also discuss potential opportunities with new contacts. Our stand featured several of our latest innovations including new compact optical particle sensors and the new Electronic Diffusion Tube, which was of particular interest to local authorities because it combines the cost advantage of diffusion tubes with the real-time data benefits derived from sensors with mobile App control."

Alphasense's Dr John Saffell also presented a workshop entitled Air Quality Monitoring using Mesh Networks, in which he explained: how to maximise the performance of low cost sensors; how to exploit the advantages of mesh networks, and how the inclusion of wind sensors in a network can help with source apportionment. In doing so, John cited examples such as a monitoring network at Heathrow, the recent BreatheLondon project and networks in Cambridge, Nairobi and Malaysia. Addressing a similar theme, Dr Nicholas Martin from NPL gave a presentation on future trends in ambient air quality monitoring and the role of standardisation. NPL is one of the partners in the BreatheLondon project and Nick explained the advantages of delivering spatially dense data, in real time, through the implementation of large networks. He also described initiatives for wider acceptance and exploitation of this novel monitoring technology, including the development of a technical protocol by the Comité Européen de Normalization (CEN) TC264 WG42 together with a laboratory and field testing measurement infrastructure.

The Air Monitors stand featured a wide variety of the latest technologies for both outdoor and indoor air quality monitoring, several of which featured in the company's three workshops. For

example, David Green described projects in which formaldehyde monitors and AQMesh pods are being used to measure indoor air quality. In one application raised levels of NO coincided with peak building ventilation, and outside monitors confirmed that NO, a precursor to NO<sub>2</sub>, was being drawn into the building. This data is vital when defining mitigation strategies. AQMesh also featured in Jim Mills' presentation on the 'BreatheLondon' project, for which Air Monitors has installed 100 pods and equipped two Google Street View cars with ambient air quality analysers. In a further workshop, Jim described an exciting new technology which avoids the requirement for some of the most common gas calibration bottles – zero air, NO, NO<sub>2</sub> and O<sub>3</sub>.

***"This was a great opportunity for us to raise awareness of our environmental planning, permitting and stack testing services with a wide range of customers."***

Summarising Air Monitors' experience at AQE 2018, Jim says: "AQE remains the most important event for air quality monitoring in the UK and beyond. All of the visitors have a professional interest in air quality, so it provides us with a great opportunity to meet new and existing customers, and to show them the latest technologies."

Jamie Jeffs from PCME said: "AQE is the only industry show dedicated to emissions monitoring that provides a forum for equipment suppliers, test houses, operators and regulators to promote and discuss the latest advancements in the world of air quality management. This was a great opportunity for anyone wanting to learn more about the industry and the future of the sector. Now combined with WWEM it provides an excellent event for environmental managers focused on what matters to them."

Steve Griffiths from Uniper agreed, adding: "This was a great opportunity for us to raise awareness of our environmental planning, permitting and stack testing services with a wide range of customers."

Zahid Salim from Signal Group reports a highly successful show, commenting: "Many of the visitors were pleased to see that we have been investing in the development of new advanced FID gas analysers. This is because some of the older FIDs on the market have been discontinued, so when replacing these instruments, customers are looking to upgrade their monitoring and utilise the best available hydrocarbon measurement technology.

"AQE 2018 provided us with an opportunity to explain the many new features of the Series IV SOLAR single and dual FID fixed gas analysers as well as the portable 3010 MINIFID PURE heated FIDs; all of which are pending new certification for QAL1/MCERTS."

AQE 2018 visitors were also very positive in their comments on the event; Simon Paterson from the Environment Agency, commented: "It was good to hear a range of voices and views around the MCPD and its impacts," and Thomas Wescott from Accon UK said AQE was "Great for industrial site operations or compliance managers that are looking to compare potential suppliers and get advice on their monitoring needs." Similarly, Andy Collins from Ricardo Energy & Environment said: "This year's AQE show was again a very polished event, with plenty of focus on emissions monitoring and ambient air quality; providing a great

opportunity to network with regulators, operators and suppliers."

With much of the responsibility for air quality falling on local councils, the organisers were delighted with the number of authorities present. For example, commenting on the event, David Jones from Flintshire County Council said: "Great place to meet people you only usually speak to on the phone or via email."

Much appreciation was shown by the visitors for the free parking, lunch and refreshments, and many commented on the advantages of being able to walk freely between the two events.

A **Gala Dinner** for both AQE and WWEM took place on the evening of 21st November. The winners of various competitions were announced, as well as the most recent awards for MCERTS certificates. The guest speaker was Brian Blessed, the famed actor and explorer, who reminded guests that (Flash) "Gordon is alive!"

With so much going on at both WWEM and AQE, the only criticism was that some visitors were unable to see and do everything that they would have liked. Nevertheless, those visitors that stayed for both days found this extremely beneficial and the organisers will urge people to do the same next time.

## 2020 vision

By co-locating WWEM and AQE, the 2018 event was able to exploit the synergy that exists between both sides of environmental monitoring, whilst maintaining the events' focus on testing and monitoring. "With the majority of people visiting both events, and numbers up by 19% we are clearly making it easier for people to find the information they need, as well as that which they didn't expect!" comments organiser Marcus Pattison. "We will therefore run the two events together again on 11th and 12th November 2020 – please add the dates to your diary!"


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