

# WWEM 2018

## Water, Wastewater & Environmental Monitoring EVENT CATALOGUE Conference, Exhibition & Workshops

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Supporting Trade Associations



# AQUASONDE

Multiparameter sondes with internal power and logging



The AquaSonde brings built in data logging capabilities to our range of reliable multiparameter water quality testing probes.

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All AquaSondes feature an internal memory that is capable of storing up to 150,000 full data sets, that equates to over 3 years continuous data logging.

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All AQUASONDES include empty ports allowing extra customisation options

The new range features 3 new sondes, the AQUASONDE-2000, AQUASONDE-5000 and the AQUASONDE-7000.

All have the same great features and sensors of their Aquaprobe counterparts but with the added benefit of internal power and internal memory.



AQUASONDE-7000



AQUASONDE-5000



AQUASONDE-2000



This year Aquaread celebrate their tenth year of innovation

## Welcome to WWEM 2018

WWEM 2018 is our biggest to date, with more exhibitors, conferences and workshops, coupled with additional water industry partners and a record number of registered visitors. Thank you to all of you involved in making WWEM the leading Water and Wastewater monitoring event. Our industry partners have again excelled themselves in putting together a superb technical programme of conference and workshop presentations, covering all aspects of water monitoring and measuring applications, regulations and technologies for process operators, plant managers, laboratory scientists, instrument users and even apprentices.

WWEM was launched in 2005 and has grown in size ever since. This year the event has attracted attendees from 57 different countries representing North, South and Central America, Europe, Africa, Asia, and the Middle East. I would like to welcome you all.

WWEM 2018 includes many free to enter activities around the show. Examples include the ever popular Flow Forum, the WIPAC Workshop learning rooms, presentations by the Pump Centre, Profibus Workshop sessions and the SWAN Forum talks on the digital transformation of water and IT. Please join in and attend these free events as your questions, opinions and input will be highly appreciated by presenters and fellow participants alike.

The WWEM exhibition will feature all major manufacturers and suppliers of water monitoring instrumentation and allows you the opportunity to compare products, prices and technology. Please take time to speak with the exhibitors as they have a wealth of knowledge and advice. Many will also be launching new products at the show.

This year WWEM is running at the same time as AQE 2018 'The Air Quality and Emissions Show'. If you have an interest in air monitoring your WWEM badge will allow you free entry into AQE. Please feel free to network in the AQE exhibition and attend the various workshops being run around the hall.

On Wednesday at 4pm the LECO sponsored drinks networking reception provides a first-rate opportunity to catch up with colleagues and clients after a busy day at the show.

Finally, free buffet lunches will be served and replenished each day between 12pm and 2pm. Refreshments will also be served to all visitors, delegates and exhibitors in the intervals during the day - please help yourself.

We look forward to welcoming you again to the next WWEM event, which will be held on 11th-12th November 2020.



A handwritten signature in black ink that reads "M. Pattison".

**Exhibition Organiser**  
**Marcus Pattison**

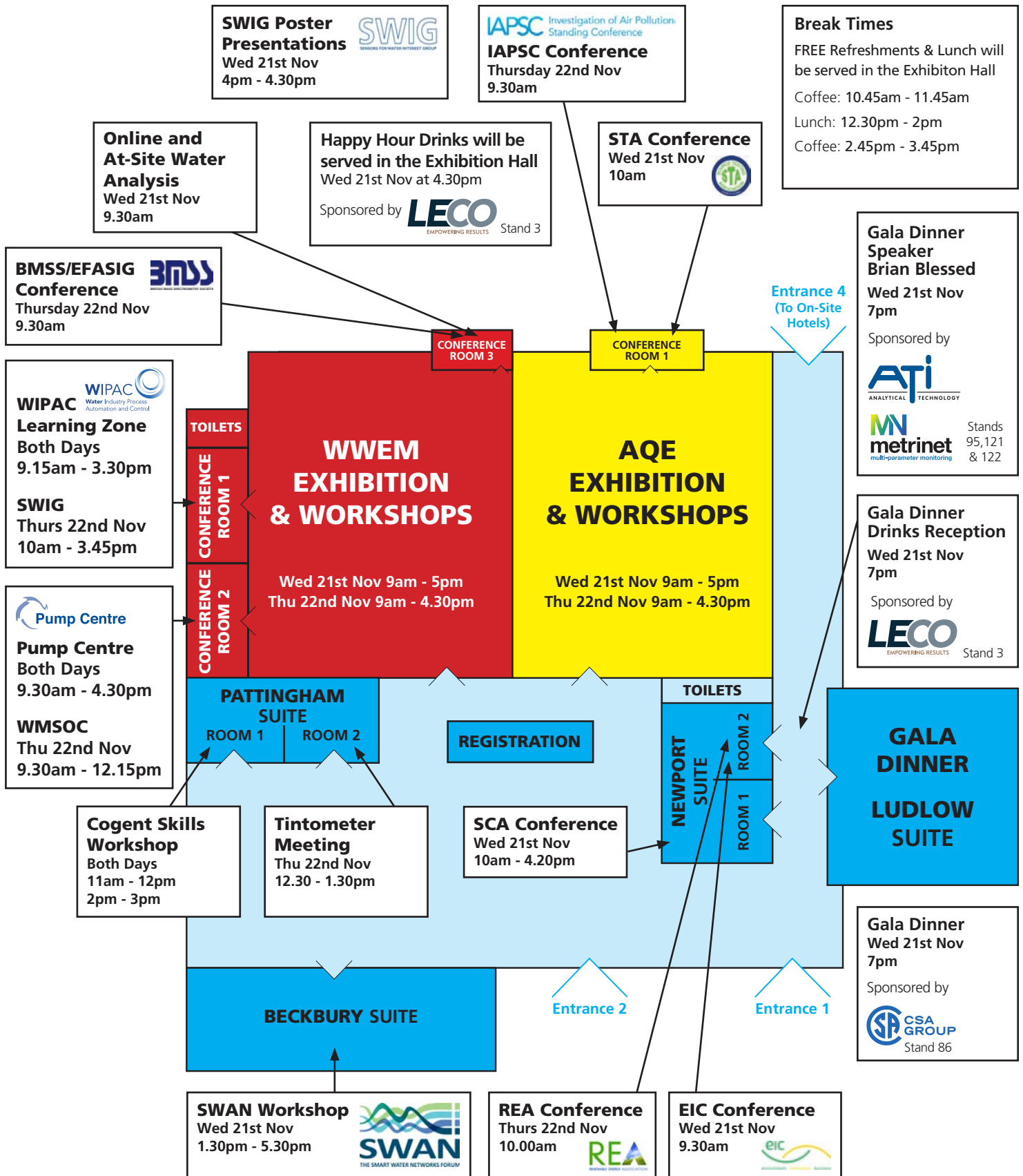
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**FREE WIFI ACCESS:** Network: TIC Username: **WWEMAQE** Password: **november**

**WWEM Opening Times**  
Wed 21st November - 9am – 5.00pm  
Thurs 22nd November - 9am – 4.30pm

**Break Times**  
Morning Coffee - 10.45am – 11.45am  
Lunch - 12.30pm – 2.00pm  
Afternoon Coffee - 2.45pm – 3.45pm

# Telford International Centre





Knowledge grows



# Yara Odour and H<sub>2</sub>S Solutions

Today we are expanding our range of solutions to include vapour phase treatment. Yara has listened to the needs and challenges of our customers and we are introducing some changes that will improve your chances of tackling your problem, whether it is the smell that is causing nuisance in your community, you are worried about the health of your workers or want to avoid corrosion and costly repairs in the future.

With our integrated concept you choose when and where to tackle your H<sub>2</sub>S related problem, our YaraNutriox solution will allow you to prevent it, while our YaraEvodor solution will help to remove it once it has occurred. Of course both can be used independently or mixed so you always get the result you want, no matter your system.

For more information contact us:  
Email: [nutriox@yara.com](mailto:nutriox@yara.com) Tel: 01472 889 300



**YaraNutriox™**  
Odor and H<sub>2</sub>S Prevention

**YaraEvodor™**  
Odor and H<sub>2</sub>S Removal

## SCA Conference

**Wednesday 21st November - Newport Room 1**

### The SCA story: Past, present and potential future

**K. Clive Thompson, Chief Scientist, ALS UK Food and Pharmaceutical**

The formation of the Standing Committee of Analysts took place back in 1972 and was initially based at the famous Marsham Towers at 2, Marsham Street ([https://en.wikipedia.org/wiki/2\\_Marsham\\_Street](https://en.wikipedia.org/wiki/2_Marsham_Street)) with the renowned Laurie Pitwell as Secretary. Laurie put his whole life into the production of the famous series of SCA Blue Books until his retirement in about 1990. His successor was Dr David Westwood and recently on David's retirement, Rob Carter took over in 2016, (both from the Environment Agency.)

The Standing Committee of Analysts (SCA) exists to provide authoritative guidance on methods of sampling and analysis of waters and effluents, sewage sludge's, sediments, soils (including contaminated land) and biota. Where appropriate, guidance on the sampling and analysis of air will also be produced. The primary duty of SCA is to develop and publish recommended analytical methods. This will not include the provision of advice on, or interpretation of results. All methods published by the SCA should be capable of satisfying a regulatory demand, be fit for purpose and represent best practice within the United Kingdom.

The first Blue Book was "Cadmium in potable waters by atomic absorption spectrophotometry 1976 ISBN 0117511366" this was when all the books were published by the HMSO in A4 size booklet form with the very distinctive blue covers. This cadmium method comprised 49 pages and cost £0.90p! The subsequent lead method cost was only £0.65p. A huge amount of technical progress has been made in the last 49 years! Now all SCA methods are free and available on line.

The past SCA history will be summarised and the current position will then be outlined. Finally, the potential future direction will be discussed. The presentation will make a comparison of the SCA and ISO/CEN standardisation method approaches. After Brexit, the importance of the SCA is likely to increase and it should be able to develop new and revise existing national UK methods in a timely manner to meet industry and UK regulator needs. Much quicker than for ISO and CEN methods!

Finally a plea will be made for more industrial support for this worthy UK organisation in respect of both technical expert staff time and financial support for these staff to attend SCA meetings. This networking will greatly enhance the CPD of these technical staff.

Time	Presentation	Speaker	Affiliation & Company
10:00	The SCA story: - Past, present and potential future	Prof K Clive Thompson	Chief Scientist, ALS Food and Pharma
10:30	Defining the SCA's priorities	Marcus Rink	Chair SCA & Chief Inspector, Drinking Water Inspectorate
<b>Coffee Break &amp; Networking (11:00 - 11:30)</b>			
11:30	The UKAS perspective including special reference to the SCA Inorganics and Metals working group	Paul Greenwood	Divisional Director (Operations), United Kingdom Accreditation Service
12:00	The evolution of drinking water microbiology - a look through time and the technicalisation of microbiology; innovation and advancement	Shaun Jones	Chair, SCA Microbiology Working Group and Public Health Manager at Wessex Water
12:30	Sampling and information needs in the modern environment	Steve Markham	Managing Director, Marquis & Lord
<b>Lunch and Exhibition (12:50 - 14:00)</b>			
14:00	Chemical analysis of soils and associated materials	Hazel Davidson	Technical Marketing Manager, Derwentside Environmental Testing Services
14:20	Organics, Stability and Uncertainty - A tale of three working groups	Rick Kirkpatrick	Accreditation Scientist, Northumbrian Water
<b>Coffee Break &amp; Networking (14:50 - 15:20)</b>			
15:20	The role of on-line water quality monitoring in the production of top quality tap water	Chris Rockey	Sampling and Water Quality Manager, South West Water
15:50	Try and make this contentious and interesting!!!	Discussion session with all speakers	
16:20	Closing remarks	Prof K Clive Thompson	Chief Scientist, ALS Food and Pharma

Please note this is a paid for event. If you have not registered, please register at the front desk. The cost of attending this event is £75+vat.



# Experts in Water Control Solutions



## One Solution for Control and Automation: PLC + HMI + VFD

**Unitronics is a leading provider of control solutions for water technology**

- Full Range of VFDs
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- IIoT support – SQL, MQTT
- Alarms & Alerts
- Multi-level password protection
- Recipes & data logging via data tables
- One Software for PLC, HMI, & VFD
- Local representatives & support



## Online and At-Site Water Analysis

**Wednesday 21st November - Conference Room 3**

### Hot Topics Dominate the WWEM Analytical Conference!

Following feedback from industry the WWEM Conference committee have designed the scientific programme around a number of key themes which have been highlighted as current "hot topics" for the analytical community.

The first day of WWEM presentations will start with the issues of micro-plastics with two talks on the detection and measurement of micro-plastics in water and environmental matrices and we are very pleased to have our opening plenary lecture by Dr Andrew Mayes from the University of East Anglia on the Detection and Counting Microplastics - Is Nile Red the Answer? The main theme of the day is On-Line and At-Site Analysis with six talks covering a diverse application range on this important topic. The day concludes with 3 talks covering the theme Metals and Nutrients followed by the very popular Happy Hour networking event.

Day 2 starts with two presentations on Analysis for Passive Sampling with the Plenary lecture by Prof Gary Fones from Portsmouth University on the Application of Chemcatcher passive sampler for monitoring acidic herbicides in two UK river catchments followed by six talks on Waste Water Screening and concluding with two talks on Sensing Water Quality.

Overall the WWEM Conference has a very strong programme featuring new approaches to solving analysis problems of high priority to a WWEM audience and we look forward to welcoming you for all or part of the conference.

Time	Presentation	Speaker	Company
<b>Session 1: Microplastics (Chairman: Tom Lynch)</b>			
09:30	Detecting and Counting Microplastics - Is Nile Red the Answer?	Dr Andrew Mayes	University of East Anglia
10:10	Forensic Science meets Artificial Intelligence: Innovative technologies to aid the monitoring of marine litter pollution.	Dr Claire Gwinnett	Staffordshire University
<b>Coffee Break &amp; Networking (10:30 - 11:15)</b>			
<b>Session 2: On-Line and At-Site Analysis (Chairman: Tom Lynch)</b>			
11:15	Using Automated On-Line Monitoring to produce Lab-Grade Data for monitoring pollutants	Ray Perkins	Anatune
11:45	Being everywhere at once! - How IoT can help you unlock your water data	Mr Paul Sanders	Caption Data Ltd
12:05	Real-time Aquifer Monitoring for Shale Oil and Gas Extraction	Dr Maj Frederiksen	Danish Technological Institute
12:35	Ion selective field effect transistors: highly versatile tools for accurate detection of ions in water	Dr Raquel da Cruz Barros	Welling
<b>Lunch and Exhibition (12:55 - 14:10)</b>			
<b>Session 3: On-Line and At-Site Analysis (Chairman: Prof Gary Fones)</b>			
14:10	Smart Sensor Buoy for early detection of Water Pollution Agents	Dr Dennis Bakir	Innovator_Institut
14:40	Monitoring of water chemistry using novel droplet-based microfluidic sensors - in a high frequency and at a low cost	Dr Xize Niu	SouthWestSensor Ltd
<b>Coffee Break &amp; Networking (15:00 - 15:30)</b>			
15:30	Simple Analysis of Nitrogen and Phosphorus in Combination with TOC in Aqueous Samples	Mr Peter Morgan	Elementar UK Ltd
15:50	Determination of the 5-days BOD in only 48 h through an innovative ready-to-use analytical kit	Dr Mathieu Muller	AMS Envolve
16:10	Trace Analysis of Engineered Silver Nanomaterials in Environmental Water Samples	Mr Paul Clarke	Postnova Analytics UK Ltd
<b>Close and Happy Hour (16:30)</b>			

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## Pump Centre Conference (Free to attend)

**Wednesday 21st November - Conference Room 1**

### Delivering BIM - Using Product Data across the UK Water Industry for Enhanced Efficiencies in Capital Delivery and Asset Management

As the UK water industry increasingly embraces BIM Level 2 during AMP 6 and AMP 7, there will be an increasing need for bespoke water industry product data templates.

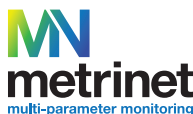
The water industry is leading the way in defining properties and creating these templates. These will allow manufacturers to transfer product information in a digital format and in turn allow owner operators to directly import vital product information into their asset management system.

BIM4Water Standard Libraries Group has developed a unique procedure for defining and reviewing product data templates. This conference will give an insight to how this process works and what data templates have been created. We shall also hear from both manufacturer's and owner operators on their use of product data and how this is increasing efficiencies across the industry.

Time	Presentation	Speaker
09:30	Welcome and introductions	Chair (BIM4Water SLG)
09:35	BIM4Water and its role within UK Water Industry	Simon Kerr, Chair BIM4Water
09:55	BIM4Water Standard Libraries Group objectives and benefits	Jamie Mills, vice Chair BIM4Water
<b>Coffee Break and Networking (10:30)</b>		
11:15	UK Water Industry approach for defining product properties	Roger Marlow, Pump Centre
11:45	Structured creation of product data templates and compliance with standards	Espen Schulze, CEN442
12:05	Digital Delivery & Structured Information Management for BIM Level2	Trevor Lewis, Stantec
12:35	The role of data in standard products and Build off Site	Mark Froggatt, Anglian Water
<b>Lunch and Exhibition (12:55)</b>		
14:10	Practical applications of product data in asset management	Mike Overy, Northumbrian Water Group
14:40	Benefits case study, using product data in asset management	James Boyle, Scottish Water
<b>Coffee Break and Networking (15:00)</b>		
15:30	Manufacturer's Perspective - locating data and generating product data sheets	TBC, Xylem
15:50	Future Using Data - where to next?	Steve Pearson, Phusion IM
16:10	Question Time and discussion	
<b>Close (16:30)</b>		

## *WWEM & AQE Gala Dinner*

**Wednesday 21st November at 7pm**



# SWAN Workshop: Accelerating a Smart, Resilient Water Future (Free to attend)

**Wednesday 21st November - Beckberry Suite**

The Smart Water Networks Forum (SWAN) is the leading hub for the smart water sector. SWAN brings together key players in the water sector to collaborate and accelerate the use of data-driven solutions in water and wastewater networks worldwide.

By attending the SWAN Workshop on Nov. 21st, participants will be able to:

- Gain insights on the most pressing, water service challenges
- Learn about the latest, integrated smart water and wastewater solutions
- Hear real-life, water company case studies and best practice experiences
- Directly engage and network with water company and industry leaders through interactive roundtables

Time	Presentation
1:30 - 1:40	Session Opening by Bob Taylor, Operations Director, Drinking Water Services - South West Water
1:40 - 2:30	<p><b>Leveraging Digital Solutions to Tackle Water Loss</b> Moderated by Amir Cahn, Executive Director - SWAN Forum</p> <p><b>Panelists:</b></p> <ul style="list-style-type: none"> <li>• David Kenny, Global Sales Director - i2O</li> <li>• Phil Tomlinson, Commercial Director - Metasphere</li> <li>• Robin Bell, COO - Inflowmatix</li> </ul>
2:30 - 3:20	<p><b>Source-to-Source Smart Water Management</b> Moderated by Richard Foster, Senior Water Network Engineer - WRc plc</p> <p><b>Panelists:</b></p> <ul style="list-style-type: none"> <li>• Jonathan Adler, Commercial Manager - Aqualogic</li> <li>• Mark Hinton, Director of Operations (Software) - Servelec Technologies</li> <li>• Tom Woolley, Aquasuite's Business Development Director - Royal HaskoningDHV</li> </ul>
<b>Coffee Break &amp; Networking (3:20 - 3:50)</b>	
3:50 - 5:00	<p><b>Interactive Roundtables</b></p> <ul style="list-style-type: none"> <li>• <b>In this age of digital transformation, how can we ensure that our data is accurate?</b> Hosted by Mike Bishop, Director of Operational Services - Welsh Water</li> <li>• <b>What is the role of collaboration along the supply chain?</b> Hosted by Andy Smith, Regional Optimisation Manager - Anglian Water</li> <li>• <b>What is the best way to bring about utility culture change?</b> Hosted by David Smith, Asset Management and Production Director - Bristol Water</li> <li>• <b>What role can SMART networks play in the management of major operational incidents?</b> Hosted by Bob Taylor, Operations Director, Drinking Water Services - South West Water</li> <li>• <b>How do SMART networks contribute to improved resilience?</b> Hosted by Jez Downs, Supply System Strategy Manager, Integrated Planning - Southern Water</li> </ul>
5:00 - 5:20	Roundtable Recap by Table Representatives
5:20 - 5:30	Session Summary by Bob Taylor, Operations Director, Drinking Water Services - South West Water

# WIPAC Learning Zone (Free to attend)

**Wednesday 21st November - Seminar Rooms 1-5**

Time	Room 1 Flow Measurement	Room 2 Level, Pressure & Aeration Systems	Room 3 Measuring Water Quality	Room 4 Communications	Time	Room 5 Technical Workshops
10:00	Electro-Magnetic Flow Meters <b>Alan Hunt, ABB</b>	Pressure Measurement <b>Ivor Jones, Siemens</b>	Ammonia Measurement <b>Julian Edwards, ABB</b>	New PI Guidelines for Functional Bonding and Shielding of PROFIBUS and PROFINET  <b>Derek Lane, WAGO</b> <b>Peter Thomas, CSL</b> <b>Chris McComb - Water Industry</b> <b>Dave Evans, Balluff - IO-Link</b>	9:45	Free cyanide detection in the effluents of Integrated Steel Plant - <b>Janga Nagarjuna, Tata Steel</b>
11:00	Measuring flow using Area - Velocity Flow Measurement <b>Laurent Soliec, Nivus</b>	Radar Level Measurement <b>Matthew Westgate, Vega</b>	The role of sensors on the journey to smart water networks (11:00 - 11:30) <b>Mike Strahand, ATI</b>  The role of sensors on the journey to smart water networks (12:00 - 12:30) <b>Gary Tabor, ATI</b>		10:15	H2S combat in strong industrial waste water - <b>Michael Hahn, ECH</b>
<b>Lunch &amp; Networking (12:00 - 13:00)</b>					11:00	<b>ITS Europe</b>
13:00	Flumes, Weirs & Primary Measurement Devices <b>Simon Richardson, Siris Environmental Flow Services</b>	The Measurement of Dissolved Oxygen in wastewater  <b>Hach Presentations</b> <b>Joe Weston</b> on Instrument introductions (20 min) <b>John Hardman</b> on Instrument maintenance (20 min) <b>Patsy Rigby</b> on Instrument verification-Lab (20 min)	The measurement of Turbidity & Solids <b>Paul Norman, Partech</b>	HART & Wireless HART <b>Steve Gorvett, ABB</b>	11:30	Online and Real Time Bacteria Monitoring - <b>Neal Edmonson, Grundfos</b>
14:00	Level Based Flow <b>Martin Ruck, Siemens</b>	Aeration Control Systems  <b>Hach Presentations</b> <b>Stuart Jones</b> on Instrument introductions (20 min) <b>John Hardman</b> on Instrument maintenance (20 min) <b>Patsy Rigby</b> on Instrument verification - Lab (20 min) <b>Martin Butterfield</b> on N-RTC and associated control (20 min)	Sludge Blanket Level Measurement <b>Paul Norman, Partech</b>		12:00	In recent times a great deal of attention has been focussed onto understanding the enormous scale of plastics pollution in our aquatic environments - <b>Shimadzu</b>
15:00	Ultrasonic Time of Flight Flow Measurement <b>Robert Stevens, RS Hydro</b>	The measurement of Air Flow using Thermal Mass <b>David Claridge, Endress + Hauser</b>	Temperature Measurement <b>Chris Edwards, Endress + Hauser</b>		12:30	How to ensure Cybersafe remote access and monitoring of distributed water industry assets, for both clean and dirty water, using cloud-based solutions - <b>HMS</b>
					13:00	Looking beyond the numbers - <b>Dave Walker, Detectronic</b>
					13:30	Low Power Level and Velocity Monitoring for Sewer Networks - <b>Alistair McKinnon, Pulsar Process Measurement</b>
					14:30	Cost effective, accurate realtime Final Effluent Monitoring - <b>Matt Dibbs, Meteor Communications</b>
					15:00	Nutrient monitoring - <b>Nigel Grimsley, OTT Hydromet Group</b>
					15:30	Automation in the Modern Environmental Laboratory - <b>Sadie Vick, Seal Analytical</b>
				Radio Communications <b>Brian Back, Radio Data Networks</b>	16:00	On-Line, Real-Time Autonomous Chemical Analysis - How Far Will This Go? - <b>Phine Banks, Anatune Ltd</b>

## Profibus Workshop

**Wednesday 21st November - Seminar Room 4 - 10am - 12pm**

PI UK was founded in 1993 to promote the use of PROFIBUS in the UK. More recently it has added PROFINET and IO-Link to the range of technologies supported by the group and is now known as PROFIBUS and PROFINET International UK, or PI UK for short. It is a very active organisation representing the needs of members and users throughout the United Kingdom and other English-speaking countries, providing much-needed certified training in PROFIBUS & PROFINET for designers, engineers and installers. The group also presents a number of free-to-attend seminars around the country covering practical aspects of PROFIBUS, PROFINET and IO-Link in process automation as well as subjects such as functional safety and system security.



### **PROFIBUS Commissioning and Maintenance - Essential Tools and Training Workshop**

Special tools are needed to help ensure that new PROFIBUS connected installations provide robust, long lasting operational reliability and resilience, and later that the originally achieved levels of performance are being maintained. We outline what can be expected of such tools, how and when they should be used and the important network performance indicators that can be checked. Formal reports from the tools, taken at or soon after first system acceptance, then provide an extremely valuable benchmark against which to compare future measurements in the years ahead. The need for comprehensive training in PROFIBUS basics and how to use each tool effectively is emphasised.

#### **Derek Lane, WAGO - PROFINET for IoT, IIoT and IND 4.0 (30 min)**

A short journey to explain IIoT The Industrial Internet of things, IND4.0 from IND1.0 and Big Data. How PROFINET is placed as the ideal Industrial Fieldbus to fulfil the above, how its implemented and why you should consider it. Some of the myths explained.

#### **Peter Thomas, Control Specialists - New PI Guidelines for Functional Bonding and Shielding of PROFIBUS and PROFINET (30 min)**

The ever-increasing use of high frequency switching devices in industrial automation can result in high frequency currents circulating in an equipotential bonding network that was not designed for this purpose. The absence of a proven low-impedance bonding network can result in these currents taking alternative, and often undesirable routes. Occasionally these will be the shields of industrial network cables such as PROFIBUS and PROFINET that in turn can lead to intermittent communications problems. This presentation will discuss the issues in more detail and will explain the relevance of the recently released PI guidelines "Functional Bonding and Shielding for PROFIBUS and PROFINET".

#### **Chris McComb, iTech - The Good, the Bad and the Ugly: Profibus within the Water & Wastewater Industry (30 min)**

iTech are currently on the Scottish Water E&M Framework. This presentation will address the following areas of concern, education and remedial action:

- Concept Design - How to, when to and where to
- Installation - Show, tell and do
- Training - Design, installation, and overall engineering
- Non-conformance/failure - test, modify, test

#### **Dave Evans, Balluff - IO-Link Technology (30 min)**

This presentation will be covering what a typical IO-Link solution consists of, how it interfaces to the control system and the benefits that can be derived from this increased level of communication with IO-Link devices. These include: easier handling of measurement signals, remote and automatic device parameterisation, smart sensor diagnostic functions, safety over IO-Link whilst also being an enabler for Industrial IoT and Industry 4.0 strategies.

## Cogent Skills Workshop

### Both Days - Pattingham Suite Room 1

#### 11am - 12pm - Managing your competent workforce - the Proof and the Truth

Take time to reflect on how well your organisation is managing the competence of your workforce. Are you looking to improve your current Competence Management System and practices? Whether you are aiming for performance improvements or concerned with demonstrating regulatory compliance, Cogent Skills supports businesses to review, develop and implement robust and sustainable competence management solutions.

#### 2pm - 3pm - Process Safety or Managing Major Accident Hazards – What’s the difference?

You may be inclined to think that this doesn’t apply to you. What does good practice in process safety or major accident hazard management look like? (Not the technical stuff!) How can you make a positive change in the way all your employees proactively contribute to protecting themselves, your assets, your local communities, the environment and your businesses reputation? Find out how Cogent Skills is supporting local businesses and global corporations to create a positive safety culture – Process Safety or Managing Major Accident Hazards – what’s the difference?

## Tintometer - Traceability in Turbidity Workshop

### Thursday 22nd November

### Pattingham Suite Room 2 - 12pm - 1.30pm

There are a number of areas where the way that traceability is provided and proven is unclear.

Whether it relating to the use and accuracy/traceability of secondary standards for calibration (impacted in some part by the hazardous nature of most primary standards) or to the generation and management of records of validation data for the Drinking Water Inspectorate.

In this highly interactive seminar a leading world expert in turbidity measurement, Mike Sadar will aim to provide some clarity to the sometimes turbid issue of traceability.

Mike Sadar has over thirty years’ experience in physical and chemical methods development relating to drinking water. His specialized area of expertise is turbidity measurement that includes instrument design, application and regulatory methods. He has authored more than 20 papers and has several patents related to turbidity. He is the past chairman of ASTM D19 committee on water, and also participates on ISO and EPA committees. He graduated from Colorado State University with a BS in analytical chemistry and currently is manager of research and development for turbidity and process analytics for Tintometer Incorporated.

## Posters

No	Poster Title	Presenter	Country
1	Radar-gauge rainfall merging with uncertainty: Kriging with External Drift and Non-Stationary Variance (KED-NSV)	Prof Gary Fones, University of Portsmouth	United Kingdom
2	Microwaves and Functional Materials: a Novel Method to Continuously Detect Zinc Ions in Water	Ilaria Frau, University of Bath	United Kingdom
3	Water sensing for in-airway monitoring of ventilated patients	Jennifer Redmond, University of Oxford	United Kingdom
4	Measuring metaldehyde in surface waters in the UK using two monitoring approaches	Prof Graham Mills, University of Portsmouth	United Kingdom
5	From catchment to tap: Source and fate of polar organic chemicals and their associated risks	Prof Gary Fones, University of Portsmouth	United Kingdom
6	3D Animation for Applications to Science and the Environment	Dr Peter Baugh, EFASIG (The BMSS)	United Kingdom
7	Comprehensive Analysis of Elemental Contamination in Environmental Samples utilizing Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Dr Simon Nelms, Thermo Fisher Scientific	United Kingdom
8	The exploration on utilizing microalgae for food waste leachate treatment	Dr Steven XU Jingliang, The Open University of Hong Kong	Hong Kong
9	Comparative analysis in waste water screening applications using GC/MS and comprehensive GCxGC/MS	Marco Ruijken, MsMetrix	Netherlands
10	Chemical Speciation of metalloids arsenic and antimony in natural systems	Dennis Tuyogon, University of Liverpool	United Kingdom
11	I-Cal: Inline Ion Selective Electrode Calibration	Nathan Lawrence, ANB Sensors	United Kingdom
12	A New Approach to Fluorescence Measurements	Justin Dunning, Chelsea Technologies Group	United Kingdom
13	Introducing the latest developments to the first automated flow cytometer for microbiological monitoring of drinking water	Stefan Zimmerman, Sigris-Photometer Ag / Processplus Ltd	Switzerland
14	Feed-forward feed-back load control of Activated Sludge Process (Providing utilities with compliance assurance, energy savings and process optimisation)	Michael Dooley, Processplus with Strathkelvin Instruments	United Kingdom
15	Overcoming Challenging SM 5310B TOC Determination of Municipal and Industrial Wastewater Samples	John F. Welsh, OI Analytical	USA
16	Development of a GC-MS method for the simultaneous screening of target and non-target contaminants in river water	Sebastiano Panto, LECO	Germany
17	Surpassing Detection Limits for Contaminants in Water Using EPA Method 525.2 via GC/MS	Trevor Frost, LECO	United Kingdom

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22nd November Stand 38 & 39**

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great communicator.

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# SWIG Early Career Researcher Prize

## SWIG Selected Posters



Poster Title	Presenter	Company	Time
Radar-gauge rainfall merging with uncertainty: Kriging with External Drift and Non-Stationary Variance (KED-NSV)	Francesca Cecinati	University of Bath, UK	4.00pm
Microwaves and Functional Materials: a Novel Method to Continuously Detect Zinc Ions in Water	Ilaria Frau	Liverpool John Moores University, UK	4.10pm
Water sensing for in-airway monitoring of ventilated patients	Jennifer Redmond	University of Oxford, UK	4.20pm

SWIG invites students and employees in the field of water sensor research to design a poster summarising their work. This is an opportunity for researchers within the water and environmental sectors to showcase their scientific talents and innovative thinking.

The SWIG Early Career Researcher Prize is intended to raise awareness of technological development and novel applications related to water measurements and thereby promote innovation in sensor research and commercial application. The competition is open to all 'early career researchers' to include undergraduate and postgraduate students either in full time education or within the first 4 years of employment within their area of expertise.

The authors of all posters passing to the final judging phase will have their posters printed and displayed at the WWEM exhibition on 21st and 22nd November 2018 and the top 3 will be required to give a short presentation on their work on the 21st November, as part of the conference programme. The winner will be judged on the poster and presentation and the winner announced at the WWEM Gala Dinner.

### Judging Criteria

- Is the work of professional relevance?
- Does the work demonstrate scientific rigour?
- Is the poster well presented (in terms of clarity, layout and readability)?
- Is the abstract a clear summary of the research?
- Is good use made of diagrams, photographs and illustrations?
- Does the work show evidence of originality?
- Was the project / work successful or worthwhile?



## WMSOC Conference Rapid Microbiology Practical Applications

**Thursday 22nd November - Conference Room 1**

The Water Management Society (WMSoc) is a not-for-profit membership organisation that has been providing practical and technical training solutions to individuals and companies within the water management industry for over 40 years. Their expertise in Legionella awareness, Legionella and Water Hygiene training enables them to give the most up-to-date instruction on how to prevent Legionnaires and other waterborne diseases within various water systems, including cooling towers.

By gathering expertise from every sector of the industry, the WMSoc can offer informed and professional assistance in all matters relating to the responsible management of water in industry and commerce. They achieve this through training courses, events, publications and journals, and in addition to these, their Midlands based offices accommodate a unique, on-site Practical Training Area for hands-on experience.

Their members come from a wide range of disciplines including water suppliers, scientists, engineers, manufacturers, consultants and facilities managers. Applications are welcomed from those within the relevant industries both in the UK and overseas. Being a WMSoc member gives access to a wide range of resources and connections with other professionals and regulatory bodies within the water management industry.

The morning sessions are intended to focus on some of the new and innovative microbiological testing methods and their practical applications within the water treatment industries.

Time	Presentation	Speaker	Affiliation & Company
09:30	Welcome by Chairman	Prof K Clive Thompson	Chief Scientist, ALS Food and Pharma
09:45	Overview of New Testing Technologies	Elise Maynard	Council Member, Water Management Society
10:15	Water Management Solutions	Ian Mein	Director, Southsea STS Ltd
<b>Coffee Break &amp; Networking (10:45 - 11:15)</b>			
11:15	Don't open pandoras box unless you have a plan to deal with what you may find	Tim Wafer	Authorising Engineer - Water Hygiene, The Water Solutions Group
11:45	In-house Water Testing - Real-life Experiences	Paul McDermott	Director, PJM-HS Consulting Ltd
12:15	Roundtable Q&A	Questions to the panel from the delegates	
<b>Lunch and Exhibition (12:45 - 14:00)</b>			

Please note this is a paid for event. If you have not registered, please register at the front desk. The cost of attending this event is £75+vat.

*Join us for Happy Hour*

**Wednesday 21st November at 4pm**

*Join us for free drinks  
in the Exhibition Hall*

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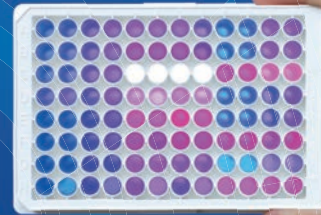
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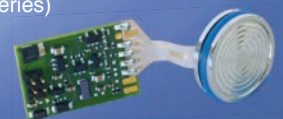
## D Line pressure transmitters

- I<sup>2</sup>C interface up to cable lengths of 5 m
- 1,8...3,6 V (optimised for button cells)
- 20  $\mu$ W at 1 S/s and 1,8 V
- Total error band  $\pm 0,7$  %FS at -10...80 °C



## X Line pressure transmitters

- RS485 interface up to cable lengths of 1,4 km
- 3,2...32 V (optimised for 3,6 V lithium batteries)
- 100  $\mu$ W at 1 S/min. and 3,2 V
- Total error band  $\pm 0,1$  %FS at -10...80 °C



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# BMSS/EFASIG Conference on Passive Sampling, Wastewater Screening and Sensing Water Quality

**Thursday 22nd November - Conference Room 3**

## Hot Topics Dominate the WWEM Analytical Conference!

Following feedback from industry the WWEM Conference committee have designed the scientific programme around a number of key themes which have been highlighted as current “hot topics” for the analytical community.

The first day of WWEM presentations will start with the issues of micro-plastics with two talks on the detection and measurement of micro-plastics in water and environmental matrices and we are very pleased to have our opening plenary lecture by Dr Andrew Mayes from the University of East Anglia on the Detection and Counting Microplastics - Is Nile Red the Answer? The main theme of the day is On-Line and At-Site Analysis with six talks covering a diverse application range on this important topic. The day concludes with 3 talks covering the theme Metals and Nutrients followed by the very popular Happy Hour networking event.

Day 2 starts with two presentations on Analysis for Passive Sampling with the Plenary lecture by Prof Gary Fones from Portsmouth University on the Application of Chemcatcher passive sampler for monitoring acidic herbicides in two UK river catchments followed by six talks on Waste Water Screening and concluding with two talks on Sensing Water Quality.

Overall the WWEM Conference has a very strong programme featuring new approaches to solving analysis problems of high priority to a WWEM audience and we look forward to welcoming you for all or part of the conference in November.

Time	Presentation	Speaker	Company
<b>Session 5: Analysis for Passive Sampling (EFASIG) (Chairman: Prof Graham Mills)</b>			
09:30	Application of the Chemcatcher passive sampler for monitoring acidic herbicides in two UK river catchments	Prof Gary Fones	Portsmouth University
10:10	Exploring the advantages of automated Sample Preparation and GC-TOF for SVOC & Pesticide Analysis in Environmental Waters	Mr John Quick	ALS Environmental
<b>Coffee Break &amp; Networking (10:30 - 11:15)</b>			
<b>Session 6: Waste Water Screening (EFASIG) (Chairman: Prof Graham Mills)</b>			
11:15	Aspects of Ion Chromatography, Mass Spectrometry & Recent Advances	Dr Detlef Jensen	Thermo Fisher Scientific
11:45	High resolution mass spectrometry in the analysis of oil and gas waste water streams	Ms Sian Davies	BP
12:05	Online monitoring of VOCs from waste effluent by GC-FID and GC-TOF MS	Dr Laura McGregor	SepSolve Analytical
12:35	Improved GC/MS identification rates for untargeted waste water screening due to advanced deconvolution tools	Dr Marco Ruijken	MsMetrix
<b>Lunch and Exhibition (12:55 - 14:10)</b>			
<b>Session 7: Waste Water Screening (EFASIG) (Chairman: Tom Lynch)</b>			
14:10	Screening of pharmaceutical and other medicinal compounds within environmental samples	Dr Ruth Godfery	Swansea University
14:40	Rapid measurement of FOG (Fat, Oil and Grease) from waste-water using bench-top NMR	Dr Kevin Nott	Oxford Instruments
<b>Coffee Break &amp; Networking (15:00 - 15:30)</b>			
<b>Session 8: Sensing Water Quality (Chairman: Tom Lynch)</b>			
15:30	Taste and Odour challenges and the world's most sensitive detector	Ms Kathy Ridgway	Anatune
15:50	Water to Cloud: A cyberphysical sensing system to monitor high frequency temporal and spatial variation in river water quality parameters	Mr Priyank Hirani	IME, University of Chicago
<b>Conference Close (16:10)</b>			

Please note this is a paid for event. If you have not registered, please register at the front desk. The cost of attending this event is £75+vat.

## SWG Conference

**Thursday 22nd November - Conference Room 2**

There has been increasing awareness in recent years of the work by the Environment Agency to implement the 'polluter pays' principle, with news of successful prosecutions of large organisations. The 'polluter pays' principle is also at the heart of current governmental discussions on implementation of a Green Brexit. The aim of the morning session is to provide Industrial dischargers, Water companies, Contractors and Instrumentation providers an update on implementation of successful monitoring systems which ensure compliance and show how Industry themselves benefit from discharge monitoring.

Morning Session: Industrial discharge monitoring & Smart water: extracting value & insights from data		
Time	Presentation	Speaker(s)
10:00	Introduction by the Chairman	Justin Dunning, Chelsea Technologies Group
10:10	Flow and Effluent Monitoring requirements in groundwater activity permits	Lucy Snape, Environment Agency
10:40	Remote monitoring of final effluent using Multiparameter Sondes	Matt Dibbs, Meteor Communications
Coffee Break & Networking (11:10 - 11:30)		
11:30	An automatic monitoring solution to prove trade effluent discharge for a food processing company	Martin Croft, Dynamic Flow Technologies
12:00	3-D Printed and Screen-Printed Sensors for the Determination Pollutants in Water	University of the West of England

This session will explore the way that insights and value can be extracted from the huge amounts of data that is either already available or that will be generated by future deployments. The focus will be on the way issues such as data availability, data validity are addressed to allow powerful analytics and human examination to focus in on outliers and events. One key aim of any potential user of smart water systems is to move from a largely reactive world to a predictive world. This session will give insights into how that is possible.

Afternoon Session: Industrial discharge monitoring & Smart water: extracting value & insights from data		
Time	Presentation	Speaker(s)
13:30	Introduction by the Chairman	Mike Strahand, ATi
13:40	Develop an organisational capability to run analytics enabling business functions to derive meaningful information from their data	Accenture
14:10	Wastewater reuse and service management using Internet of Things	Laurie Reynolds, Aquamatix and Aquality
Coffee Break & Networking (14:30 - 14:45)		
14:45	Using machine learning on a cloud platform to extract value from water quality data	Steve Hanslow, Siemens
15:15	Case study of large scale water quality monitor deployment in distribution network	Mike Strahand, ATi Jez Downs, Southern Water Luke Valvona, Intellitect
Close (15:45)		

Please note this is a paid for event. If you have not registered, please register at the front desk. The cost of attending this event is £75+vat.

## Profibus Workshop (Free to attend)

**Thursday 22nd November - Seminar Room 4 - 10am - 12pm**

PI UK was founded in 1993 to promote the use of PROFIBUS in the UK. More recently it has added PROFINET and IO-Link to the range of technologies supported by the group and is now known as PROFIBUS and PROFINET International UK, or PI UK for short. It is a very active organisation representing the needs of members and users throughout the United Kingdom and other English-speaking countries, providing much-needed certified training in PROFIBUS & PROFINET for designers, engineers and installers. The group also presents a number of free-to-attend seminars around the country covering practical aspects of PROFIBUS, PROFINET and IO-Link in process automation as well as subjects such as functional safety and system security.



### PROFIBUS Commissioning and Maintenance - Essential Tools and Training Workshop

Special tools are needed to help ensure that new PROFIBUS connected installations provide robust, long lasting operational reliability and resilience, and later that the originally achieved levels of performance are being maintained. We outline what can be expected of such tools, how and when they should be used and the important network performance indicators that can be checked. Formal reports from the tools, taken at or soon after first system acceptance, then provide an extremely valuable benchmark against which to compare future measurements in the years ahead. The need for comprehensive training in PROFIBUS basics and how to use each tool effectively is emphasised.

#### Derek Lane, WAGO - PROFINET for IoT, IIoT and IND 4.0 (30 min)

A short journey to explain IIoT The Industrial Internet of things, IND4.0 from IND1.0 and Big Data. How PROFINET is placed as the ideal Industrial Fieldbus to fulfil the above, how its implemented and why you should consider it. Some of the myths explained.

#### Peter Thomas, Control Specialists - New PI Guidelines for Functional Bonding and Shielding of PROFIBUS and PROFINET (30 min)

The ever-increasing use of high frequency switching devices in industrial automation can result in high frequency currents circulating in an equipotential bonding network that was not designed for this purpose. The absence of a proven low-impedance bonding network can result in these currents taking alternative, and often undesirable routes. Occasionally these will be the shields of industrial network cables such as PROFIBUS and PROFINET that in turn can lead to intermittent communications problems. This presentation will discuss the issues in more detail and will explain the relevance of the recently released PI guidelines "Functional Bonding and Shielding for PROFIBUS and PROFINET".

#### Dave Evans, Balluff - IO-Link Technology (30 min)

This presentation will be covering what a typical IO-Link solution consists of, how it interfaces to the control system and the benefits that can be derived from this increased level of communication with IO-Link devices. These include: easier handling of measurement signals, remote and automatic device parameterisation, smart sensor diagnostic functions, safety over IO-Link whilst also being an enabler for Industrial IoT and Industry 4.0 strategies.

#### Richard Needham, HiPort Controls - PROFIBUS Commissioning and Maintenance - Essential Tools and Training (30 min)

Special tools are needed to help ensure that new PROFIBUS connected installations provide robust, long lasting operational reliability and resilience, and later that the originally achieved levels of performance are being maintained. We outline what can be expected of such tools, how and when they should be used and the important network performance indicators that can be checked. Formal reports from the tools, taken at or soon after first system acceptance, then provide an extremely valuable benchmark against which to compare future measurements in the years ahead. The need for comprehensive training in PROFIBUS basics and how to use each tool effectively is emphasised.

## WIPAC Learning Zone (Free to attend)

**Thursday 22nd November - Rooms 1-5**

Time	Room 1 Flow Measurement	Room 2 Level, Pressure & Aeration Systems	Room 3 Measuring Water Quality	Room 4 Communications	Time	Room 5 Technical Workshops
10:00	Electro-Magnetic Flow Meters <b>Alan Hunt, ABB</b>	Pressure Measurement <b>Ivor Jones, Siemens</b>	Ammonia Measurement <b>Julian Edwards, ABB</b>	PROFIBUS Commissioning and Maintenance - Tools and Essential Training  <b>Derek Lane, WAGO</b> <b>Peter Thomas, CSL</b> <b>Chris McComb - Water Industry</b> <b>Dave Evans, Balluff - IO-Link</b>	9:45	Septicity and Treatment <b>Yara International</b>
11:00	Measuring flow using Area - Velocity Flow Measurement <b>Laurent Soliec, Nivus</b>	Ultrasonic Level Measurement <b>Derek Moore, Siemens</b>	The role of sensors on the journey to smart water networks (11:00 - 11:30) <b>Mike Strahand, ATI</b>  The role of sensors on the journey to smart water networks (12:00 - 12:30) <b>Gary Tabor, ATI</b>		11:00	Smartchem 450 benchtop Discrete analyser <b>Thomas O'Reilly, Labmedics</b>
<b>Lunch &amp; Networking (12:00 - 13:00)</b>						
13:00	Flumes, Weirs & Primary Measurement Devices <b>Simon Richardson, Siris Environmental Flow Services</b>	The Measurement of Dissolved Oxygen in wastewater <b>Hach Presentations</b> <b>Joe Weston</b> on Instrument introductions (20 min) <b>John Hardman</b> on Instrument maintenance (20 min) <b>Patsy Rigby</b> on Instrument verification-Lab (20 min)	The measurement of Turbidity & Solids <b>Paul Norman, Partech</b>	HART & Wireless HART <b>Steve Gorvett, ABB</b>	12:30	How to ensure Cybersafe remote access and monitoring of distributed water industry assets, for both clean and dirty water, using cloud-based solutions - <b>HMS</b>
14:00	Level Based Flow <b>Martin Ruck, Siemens</b>	Aeration Control Systems <b>Hach Presentations</b> <b>Stuart Jones</b> on Instrument introductions (20 min) <b>John Hardman</b> on Instrument maintenance (20 min) <b>Patsy Rigby</b> on Instrument verification - Lab (20 min) <b>Martin Butterfield</b> on N-RTC and associated control (20 min)	Sludge Blanket Level Measurement <b>Paul Norman, Partech</b>		13:00	New approach to continuous determination of mercury in industrial water using Zeeman Atomic Absorption Spectrometry <b>Mark Brereton, Spectronic</b>
15:00	Ultrasonic Time of Flight Flow Measurement <b>Robert Stevens, RS Hydro</b>	The measurement of Air Flow using Thermal Mass <b>David Claridge, Endress + Hauser</b>	Temperature Measurement <b>Chris Edwards, Endress + Hauser</b>	Radio Communications <b>Brian Back, Radio Data Networks</b>	13:30	Exploring the advantages of automated Sample Preparation and GC-TOF for SVOC & Pesticide Analysis in Environmental Waters <b>John Quick, ALS Environmental</b>
					14:00	Secure data communication to remotely monitor and control critical infrastructures <b>INSYS Microelectronics UK</b>
					14:30	What does WEEE open scope mean for my products? <b>Abbey Fortescue, B2B Compliance</b>
					15:00	Maximising Measurement Confidence of Installed Flow Meters <b>ABB</b>
					15:30	Remote condition monitoring within the Water & Waste Water Industry <b>ABB</b>





**WIPAC**

**Water** Industry Process  
Automation and Control

*Water Industry Process  
Automation & Control*

*Flow Forum & Learning Zone*

21<sup>st</sup> & 22<sup>nd</sup> November 2018

## WIPAC at WWEM



The Water Industry is heading towards a “digital future” and at the centre of this future is the use of instrumentation. An example of this is flow and the control of flow at the industry’s wastewater treatment works. The next Asset Management Period sees the industry’s largest ever programme of works surrounding of installing flow measurement and control systems ensuring that the treatment works around the country treat all of the flow that they should do. This Asset Management Period we have seen the installation of Event Duration Monitoring Devices in the wastewater collection network. The strategy obvious, to ensure that the treatment works are treating the maximum amount of flow that they need to.

At the same time that the industry is installing instrumentation to help to manage these systems it is suffering from a shortage in skilled instrumentation & control specialists and it is by going back to basics with instrumentation that the industry will move forward with its “Smart” or “Digital future. It is through this that collaboration through organisations such as the Water Industry Process Automation & Control Group and International Labmate who organise WWEM that we, as an industry can help to go back to basics, help to develop the instrumentation skills within the industry and spread the knowledge around good practices in instrumentation and process control that we ensure that the industry can reap the benefits that a Smart or Digital industry will bring to the industry as a whole.

Have a fantastic WWEM.

Oliver

## WIPAC Flow Forum (Free to attend)

The Water Industry is heading towards a “digital future” and at the centre of this future is the use of instrumentation. An example of this is flow and the control of flow at the industry’s wastewater treatment works. The next Asset Management Period sees the industry’s largest ever programme of works surrounding of installing flow measurement and control systems ensuring that the treatment works around the country treat all of the flow that they should do. This Asset Management Period we have seen the installation of Event Duration Monitoring Devices in the wastewater collection network. The strategy obvious, to ensure that the treatment works are treating the maximum amount of flow that they need to.

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Time	Presentation	Speaker	Company
09:15	Introduction to the Flow Forum and start of the Instrumentation Apprentice Competition		
<b>Maintenance of Flow Measurement</b>			
09:45	Open Channel Flow Measurement Systems - Strategies for Maintenance	Marc Swain	Severn Trent Water
10:15	Flow meter maintenance from data to magmeters	Craig Handford & Sepideh Sobhdam	Morrison Utilities
10:45	The right way to do flow meter installation	Steven French	Z-Tech Control Systems
<b>Flow Control &amp; Management</b>			
11:30	Flow Control in practice - some case studies of controlling flows	Oliver Grievson	WIPAC
12:00	Case study of using portable electro-magnetic flow meters for mains testing	Nigel Langham	Langham Controls
12:30	Using Flow Measurement for a Smarter Wastewater Network	TBC	Anglian Water
<b>Lunch and Exhibition (13:00 - 14:30)</b>			
<b>Developments in Flow Measurement</b>			
14:30	Developments in Time of Flight Flow Measurement	Rob Stevens	RS Hydro
15:00	Free surface measurement in wastewater flow	Andy Nichols	University of Sheffield
15:30	Surface Acoustic Wave Flow Measurement	Greg Wainhouse	Burkert Fluid Control Systems
<b>Summary &amp; Close (16:30)</b>			

# WIPAC Flow Forum

## 21<sup>st</sup> November 2018



The Water Industry Process Automation & Control (WIPAC) Flow Forum will be hosted by its Executive Director, Oliver Grievson and is kindly sponsored by RSHydro. It is there to champion the latest developments in the measurement of flow in the Water Industry. This years themes are shaped around the challenges that the industry currently faces around the maintenance and control of flow measurement and how we have technical solutions to these challenges with the latest developments within flow measurement

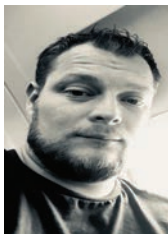
### Session 1 - Maintenance of Flow Measurement



Marc has worked at Severn Trent Water for over 30 years in both clean water and waste water environments. He is currently one of three Flow Compliance Technical Advisors, tasked with ensuring the company's regulatory commitments for wastewater flow discharges are met. Marc is responsible for over 200 MCERTS flow meter installations and this has enabled him to develop a wide-ranging technical knowledge of both open and closed channel flow measurement systems. He represents the company on the national MCERTS Steering Group and sits on several other UK working groups involved with projects relating to improving existing and future flow measurement compliance.



Craig Handford is a project engineer for Morrison Utilities Services working on the Anglian Water MCERTS base maintenance contract. In the year's that he has been the project engineer for this contract he has been involved in leading the project delivery in the cleaning of electro-magnetic flow meters, the asset replacement of redundant instrumentation as well as leading the project team in the complete replacement of whole flow measurement systems. Craig will discuss how, in delivering this programme of works, the quality of the programme has had a huge influence on the reliability of Anglian Water's MCERTS Flow Measurement



Steven French is an electrician and instrumentation specialist with Z-Tech Control Systems, a company who specialise in flow measurement and instrumentation across the Water, Power & Rail Industries.

In his talk , Steven will be looking at application and installation of instruments with his may years of experience in the filed and looking at ways we can improve, as an industry, the way that instruments are installed in order to increase both reliability of both data and the asset life of the instrumentation.

### Session 2 - Flow Control & Measurement



Oliver Grievson is the Technical Lead for the Water Industry at Z-Tech Control Systems, as well as being the Executive Director of Water Industry Process Automation & Control. He has a vast amount of experience of instrumentation and its application in the Water Industry. In his previous role he was the Flow Compliance Manager for Anglian Water services where he looked in detail into the methodologies of FFT Flow Control & Measurement seeing examples of both good practice in flow control as well as control systems that simply don't work. In his presentation he will discussing some of the challenges that the industry face in the next Asset Management Period when FFT Control comes to the forefront.

Nigel Langham



Lorenzo Pompa is an asset optimisation engineer in Anglian Water whose main focus has been putting smart control systems into the Water Recycling Collection network.

This has involved a large project in installing flow monitoring, pump reversal systems and Simocode based control systems in pumping stations in order to allow for both improved maintenance and control of the collection network



# WIPAC Flow Forum

## 21<sup>st</sup> November 2018

### Session 3 - Developments in Flow Measurement



Rob Stevens is the Managing Director at RS Hydro, one of the UK's leading suppliers in instrumentation to the Water Industry. Rob will be talking about the ISCO Laserflow which is the only non-contact area-velocity flow meter to receive MCERTS certification in the UK.

Rob will discuss the application of area velocity flow meters with particular relevance to firstly Bulletin 27, the MCERTS bulletin on Area Velocity and the application of the technology for FFT flow measurement which is particularly relevant for the next AMP period.



Dr Andrew Nichols is a lecturer in Water Engineering at Sheffield University. His PhD was on free surface measurement in wastewater, the subject of his presentation at the Flow Forum this year. Sheffield University is pioneering the work in this area of flow measurement as it has particular relevance in the measurement of flows with the sewer environment.

Andy is also a Director at the Sensors for Water Interest Group



Greg Wainhouse is the Field Segment Manager for the Water Industry at Burkert Fluid Control Systems which is where the Surface Acoustic Wave Flow Measurement Systems has been developed. This flow measurement technique which is an in-pipe method of flow measurement uses Surface Acoustic Waves (SAW Technology) to measure flow, density & concentration of fluids.

The aim is to look at this technology as a new solution to sludge density monitoring as an alternative to refractive light technologies

Time	Room 1 - Flow Measurement	
10:00	Electro-Magnetic Flow Meters	<b>Alan Hunt, ABB</b>
11:00	Measuring flow using Area - Velocity Flow Measurement	<b>Laurent Soliec, Nivus</b>
<b>Lunch &amp; Networking (12:00 - 13:00)</b>		
13:00	Flumes, Weirs & Primary Measurement Devices	<b>Simon Richardson, Siris Environmental Flow Services</b>
14:00	Level Based Flow	<b>Martin Ruck, Siemens</b>
15:00	Ultrasonic Time of Flight Flow Measurement	<b>Robert Stevens, RS Hydro</b>

Time	Room 2 - Level, Pressure & Aeration Systems	
10:00	Pressure Measurement	<b>Ivor Jones, Siemens</b>
11:00	<b>Wednesday 21st</b>	Radar Level Measurement <b>Matthew Westgate, Vega</b>
	<b>Thursday 22nd</b>	Ultrasonic Level Measurement <b>Derek Moore, Siemens</b>
<b>Lunch &amp; Networking (12:00 - 13:00)</b>		
13:00	The Measurement of Dissolved Oxygen in wastewater	<b>Hach Presentations (20 mins each)</b> <b>Joe Weston</b> on Instrument introductions <b>John Hardman</b> on Instrument maintenance <b>Patsy Rigby</b> on Instrument verification-Lab
14:00	Aeration Control Systems	<b>Hach Presentations (20 mins each)</b> <b>Stuart Jones</b> on Instrument introductions <b>John Hardman</b> on Instrument maintenance <b>Patsy Rigby</b> on Instrument verification - Lab <b>Martin Butterfield</b> on N-RTC and associated control
15:00	The measurement of Air Flow using Thermal Mass	<b>David Claridge, Endress + Hauser</b>

Time	Room 3 - Measuring Water Quality	
10:00	Ammonia Measurement	<b>Julian Edwards, ABB</b>
11:00	The role of sensors on the journey to smart water networks (11:00 - 11:30)	<b>Mike Strahand, ATI</b>
	The role of sensors on the journey to smart water networks (12:00 - 12:30)	<b>Gary Tabor, ATI</b>
<b>Lunch &amp; Networking (12:00 - 13:00)</b>		
13:00	The measurement of Turbidity & Solids	<b>Paul Norman, Partech</b>
14:00	Sludge Blanket Level Measurement	<b>Paul Norman, Partech</b>
15:00	Temperature Measurement	<b>Chris Edwards, Endress + Hauser</b>

Time	Room 4 - Communications	
10:00	New PI Guidelines for Functional Bonding and Shielding of PROFIBUS and PROFINET	<b>Derek Lane, WAGO</b> <b>Peter Thomas, CSL</b> <b>Chris McComb - Water Industry</b> <b>Dave Evans, Balluff - IO-Link</b>
11:00		
<b>Lunch &amp; Networking (12:00 - 13:00)</b>		
13:00	HART & Wireless HART	<b>Steve Gorvett, ABB</b>
14:00	The use of Bluetooth	<b>Peter Devine, Vega Control Systems</b>
15:00	Radio Communications	<b>Brian Back, Radio Data Networks</b>

Time	Room 5 - Technical Workshops	
9:45	Free cyanide detection in the effluents of Integrated Steel Plant	Janga Nagarjuna, Tata Steel
10:15	H <sub>2</sub> S combat in strong industrial waste water	Michael Hahn, ECH
<b>Coffee Break</b>		
11:00	TBC	ITS Europe
11:30	Online and Real Time Bacteria Monitoring	Neal Edmonson, Grundfos
12:00	In recent times a great deal of attention has been focussed onto understanding the enormous scale of plastics pollution in our aquatic environments	Shimadzu
<b>Lunch</b>		
12:30	How to ensure Cybersafe remote access and monitoring of distributed water industry assets, for both clean and dirty water, using cloud-based solutions	HMS
13:00	Looking beyond the numbers	Dave Walker, Detectronic
13:30	Low Power Level and Velocity Monitoring for Sewer Networks	Alistair McKinnon, Pulsar Process Measurement
<b>Coffee Break</b>		
14:30	Cost effective, accurate realtime Final Effluent Monitoring	Matt Dibbs, Meteor Communications
15:00	Nutrient monitoring -	Nigel Grimsley, OTT Hydromet Group
15:30	Automation in the Modern Environmental Laboratory	Sadie Vick, Seal Analytical
16:00	On-Line, Real-Time Autonomous Chemical Analysis - How Far Will This Go? -	Phine Banks, Anatune Ltd



Time	Room 5 - Technical Workshops	
9:45	Septicity and Treatment	<b>Yara International</b>
11:00	Smartchem 450 benchtop Discrete analyser	<b>Thomas O'Reilly, Labmedics</b>
<b>Coffee Break</b>		
11:30	Improving safety and legislative compliance with water analysis technologies	<b>Greg Weaver, Palintest</b>
12:00	Advances in Automation for Environmental Monitoring	<b>Shimadzu</b>
<b>Lunch</b>		
12:30	How to ensure Cybersafe remote access and monitoring of distributed water industry assets, for both clean and dirty water, using cloud-based solutions	<b>HMS</b>
13:00	New approach to continuous determination of mercury in industrial water using Zeeman Atomic Absorption Spectrometry	<b>Mark Brereton, Spectronic</b>
13:30	Exploring the advantages of automated Sample Preparation and GC-TOF for SVOC & Pesticide Analysis in Environmental Waters	<b>John Quick, ALS Environmental</b>
<b>Coffee Break</b>		
14:00	Secure data communication to remotely monitor and control critical infrastructures	<b>INSYS Microelectronincs UK</b>
14:30	What does WEEE open scope mean for my products?	<b>Abbey Fortescue, B2B Compliance</b>
15:00	Maximising Measurement Confidence of Installed Flow Meters	<b>ABB</b>
15:30	Remote condition monitoring within the Water & Waste Water Industry	<b>ABB</b>

# WWEM Instrumentation Apprentice Competition

## 21<sup>st</sup> November 2018

The Instrumentation Apprentice Competition first started at WWEM 2014 and is designed to provide a friendly competition environment for Apprentices within the Water Industry to challenge themselves against their peers.



The WWEM Instrumentation Apprentice Competition returns in 2018 with the addition of Apprentices, not only from the Water Companies but contractors too. The Apprentices will be tested in three rounds plus a secret round that they will find out about during the competition.

In the first round they will be given design problems and have to seek assistance from both the sponsors and suppliers within the WWEM exhibition, mimicking real-life where the situations they will be put in will require outside help.

In the second round, the practical round, the Apprentices will be shown some tasks by the companies that are proudly supporting the Apprentice Competition. The Apprentices will have to demonstrate their practical skills by repeating the task.

In the third round the Apprentices go through a quick fire quiz round building upon the key learning points that they have picked up throughout the day



In the evening of the Apprentice Competition the Apprentices are taken to the gala dinner by the sponsoring companies where the winners, as decided by the sponsoring companies, are announced and over the next year the winning team visit the companies as their “prize” to further develop their skills in instrumentation.

The competition couldn't happen without the support of the sponsoring and supporting companies and special thanks are due to these companies for supporting the competition. These companies are:

**Sponsors** : - ABB, ATi UK, Partech Instruments, RS Hydro, Siemens & Vega

**Supporters** : - Siris, SWIG & WRc

**Organisers** : - WIPAC & WWEM



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Web: [www.abb.com/measurement](http://www.abb.com/measurement)

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## Advantage Controls Europe Ltd



### Stand 33

Unit 4, Ground Floor Offices, Foley Business Park, Foley Ave, Kidderminster, Worcestershire, DY11 7PG, UK  
Tel: +44 01562743656

Email: [dean@advantagecontrols.co.uk](mailto:dean@advantagecontrols.co.uk)

Web: [www.controlwatersolutions.co.uk](http://www.controlwatersolutions.co.uk)

Control Water Solutions, one of the leading suppliers of monitoring & control equipment and services to the Waste & Process water treatment industry, will be showcasing a range of control solutions incorporating remote monitoring capability. Through our partnership with Pyxis-Lab we are also proud to announce the Pyxis range of hand held testers, all in one analysers & wireless sensors to the UK Market. Pyxis was founded in 2012 & to date have products installed in more than 5000 locations across various industry sectors. Feel free to come & visit us at stand 33 for a live demonstration.

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### Stand 95,121 & 122

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Web: [www.atiuk.com](http://www.atiuk.com)

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## Anatune Ltd

### Stand 81

Unit 4, Wellbrook Court, Girton Road,  
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Email: [enquiries@anatune.co.uk](mailto:enquiries@anatune.co.uk)

Web: [www.anatune.co.uk](http://www.anatune.co.uk)

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## Applitek

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Web: [www.applitek.com](http://www.applitek.com)

## Aqua Test Kits Limited

### Stand 70

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Email: [aqua.testkits@btinternet.com](mailto:aqua.testkits@btinternet.com)

Web: [www.aquatestkits.com](http://www.aquatestkits.com)

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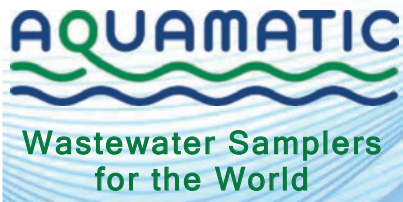
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### Aquamatic Ltd



#### Stand 8 & 9

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### Ashridge Engineering Stand 99

Unit 1a, 58 North Road Industrial Estate,  
Okehampton, Devon, EX20 1BQ, UK  
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Email: s.nichols@ash-eng.com  
Web: www.ash-eng.com

### BEKA associates Ltd Stand 133

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Email: sales@beka.co.uk  
Web: www.beka.co.uk

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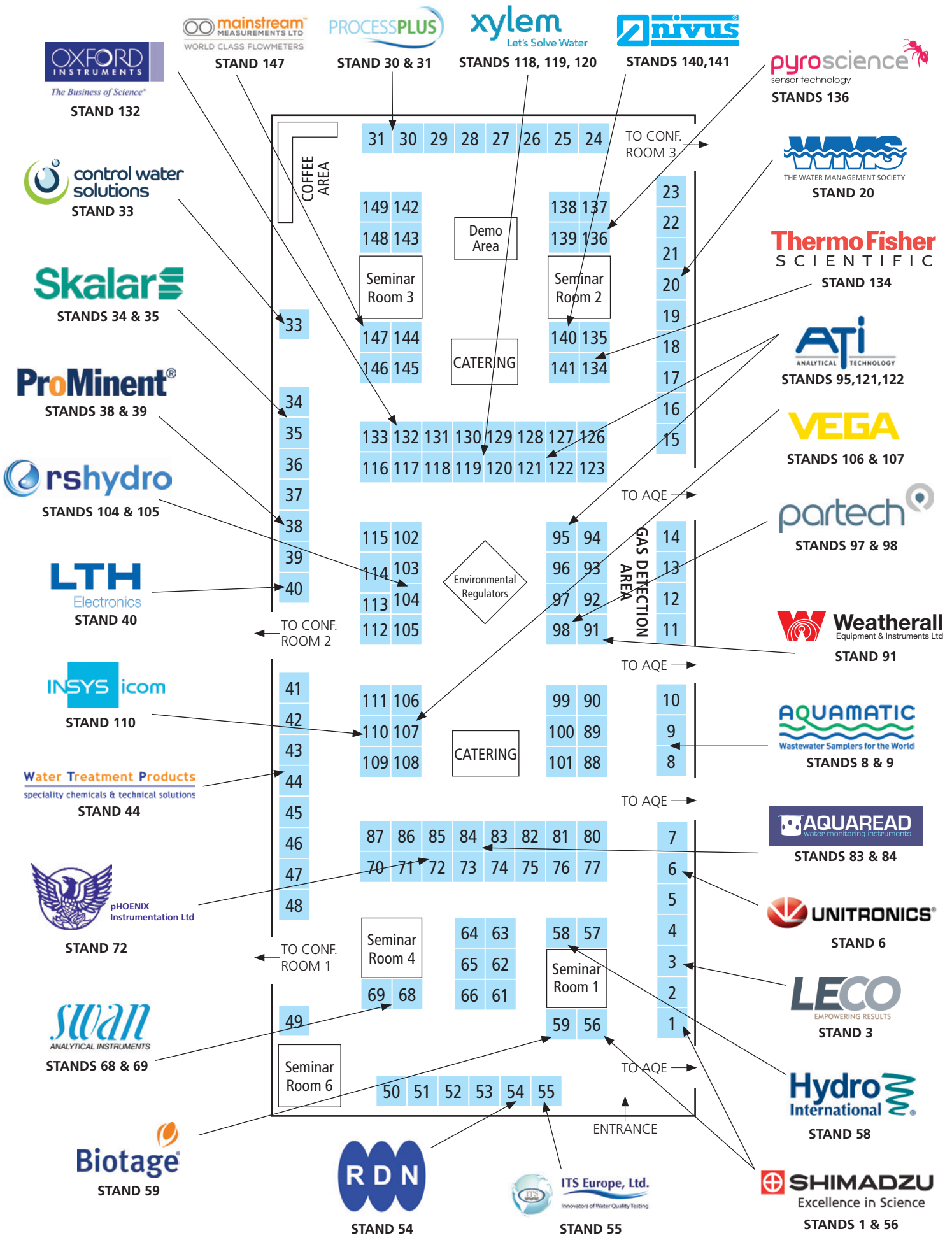
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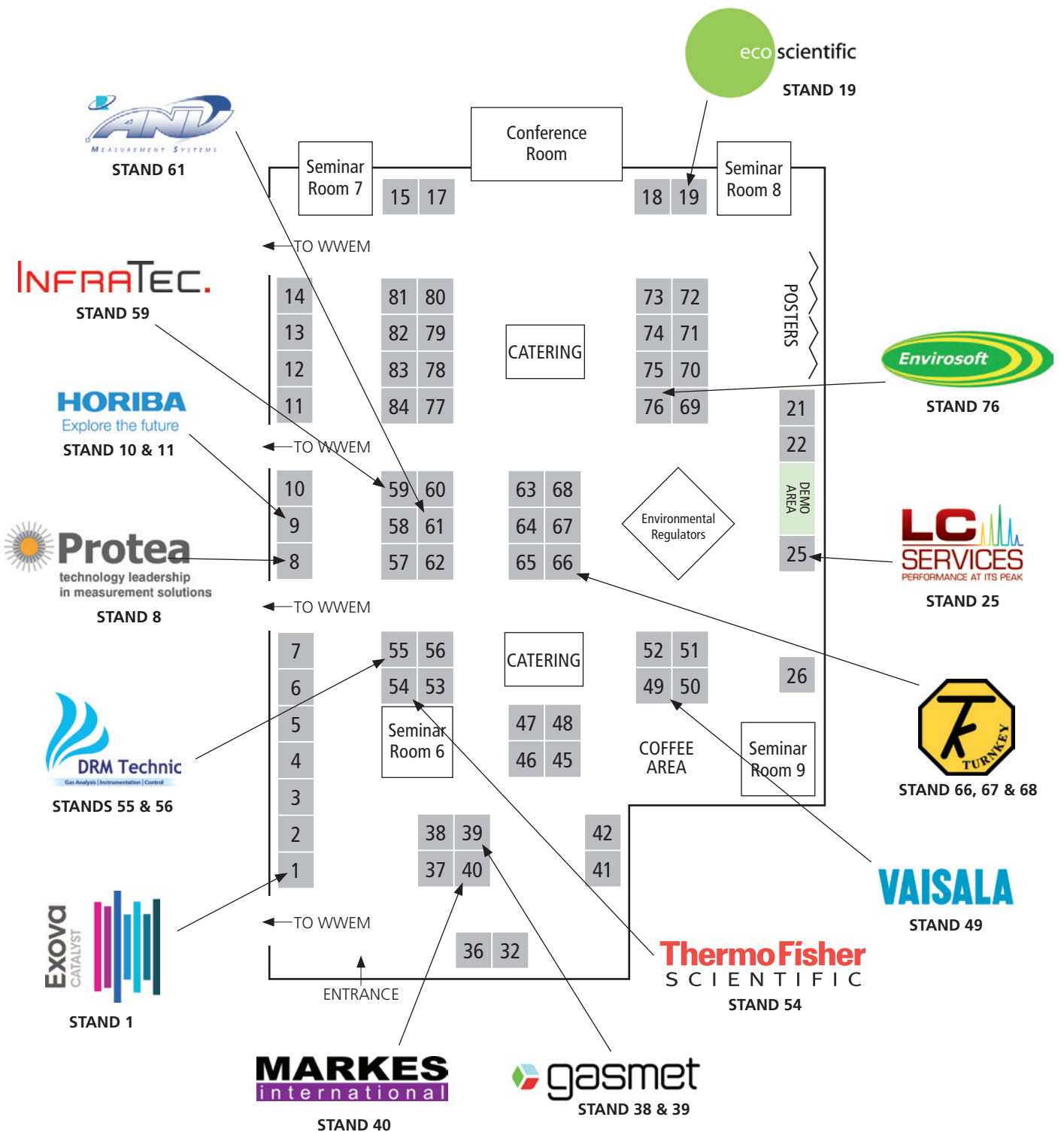
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# WWEM 2018

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Water Sampling



Well Depth



Water Quality



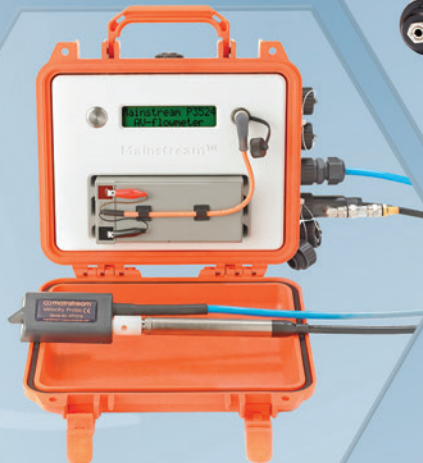
Telemetry



Surface Water Level



Ground Water Logging



Open Channel Flow Meters



## Biotage AB



### Stand 59

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## Blackline Safety Europe

### Stand 11

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Email: [eusales@blacklinesafety.com](mailto:eusales@blacklinesafety.com)  
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## Blue Scientific

### Stand 48

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Email: [info@blue-scientific.com](mailto:info@blue-scientific.com)  
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Web: [www.bruker.com](http://www.bruker.com)

## Chelsea Technologies Group

### Stand 57

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Tel: +44 2084819000  
Email: [oceans@chelsea.co.uk](mailto:oceans@chelsea.co.uk)  
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Chelsea Technologies Group offers a range of novel sensor systems, both portable and on-line, for environmental monitoring & protection of rivers, reservoirs, lakes & ground water. These sensors can be applied to in-situ effluent detection, oil spill monitoring, industrial discharge monitoring, chlorophyll & algae class studies, CDOM and dye tracing. New for this year will be the V-Lux multi-parameter fluorometer designed to detect either Aromatic Hydrocarbons, Algae or Tryptophan-like fluorescence.

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### Stand 65

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Email: [cheryl.fraser@ciwem.org](mailto:cheryl.fraser@ciwem.org)  
Web: [www.ciwem.org](http://www.ciwem.org)

The Chartered Institution of Water and Environment Management (CIWEM) is the leading International membership body and learned society for all Water and Environment professionals. The Chartered Institution of Water and Environment is the first Institution to bring together engineers, scientists and technologists into one international multi-disciplinary professional body. It is the largest organisation of its kind with a worldwide membership of over 15,000 based in over 100 countries. Working with the global Environment community, CIWEM mission is to promote the scientific development of engineering, science and technology, providing opportunities for the exchange of ideas and practices and upholding the status, standards and expertise of the professionals worldwide. CIWEM is a respected authority in every country. It is an accredited Non-Governmental Organisation with consultative status, I Panel on Climate Change (IPCC). CIWEM is a nominated and licensed body of the Engineering Council (UK) and the Science Council and has significant links with many other organisations worldwide. CIWEM also run a series of industry leading events and conferences as well as publishing globally recognised and distributed title magazines

## CoGDEM

### Stand 13

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Tel: +44 1462 434322  
Email: [admin@cogdem.org.uk](mailto:admin@cogdem.org.uk)  
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# SMART ON DATA. SMART ON SIZE.



Recent advances in the sensitivity and selectivity and modern GC-MS instrumentation combined with the development of laboratory robotic systems have made it possible to miniaturise and automate traditional sample preparation methods without compromising compound limits of detection. In particular the application of fully automated Dispersive Liquid/Liquid Microextraction (DLLME) shows great promise for the extraction of a very wide range of organic pollutants from aqueous matrices. Combination of miniaturised sample preparation with GC-TOF instrumentation enables the simultaneous trace level analysis of a wide range of environmentally significant analytes with greatly reduced labour costs. This has the potential to deliver major efficiency and productivity gains for busy commercial laboratories.

**JOHN QUICK, Principal Scientist, ALS Environmental** will speak at WWEM on this topic using LECO's PEGASUS® BT. Visit his presentation on Thursday, 22 November at 10:10 AM.

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## CSA Group



### Stand 86

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Web: [www.csagroupuk.org](http://www.csagroupuk.org)

CSA Group offers a range of certification and training services to companies operating in the water, wastewater, and environmental monitoring industries. This includes MCERTS certification, which is the Environment Agency's Monitoring Certification Scheme for equipment, personnel, and organisations. CSA Group also offers wider testing and certification services for equipment used in hazardous locations (ATEX & IECEx) and gas detector performance testing.

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Web: [www.detectronic.org](http://www.detectronic.org)

A water monitoring specialist helping to prevent flooding, reduce pollution and improve rivers and bathing water, Detectronic specialises in the design, manufacture and installation of ultrasonic wastewater flow, level and water quality monitoring equipment for smart network monitoring of sewerage, wastewater and trade effluent. Delivering cost effective, technologically advanced flow measurement systems, Detectronic provides flood management risk solutions focusing on measuring, recording, reporting and reacting to wastewater depths and flow rates.

For the last 30 years, the team has provided clients with robust measurement and data, supported by our operations and data centre that delivers continuous data screening and analysis. By implementing smart network monitoring along with a combination of real-time and predictive data analysis, we can provide timely intervention reports to warn of potential or building issues and pollution reports that will significantly minimise the duration of any pollution events should they occur. Installation of Detectronic monitoring products and use of our analysis and reporting systems enables water companies and operations teams to work more efficiently, improve compliance, reduce costs and increase customer satisfaction. In 2016 we introduced Detectronic MEICA to the group; a multi-disciplined division, providing engineering solutions across a diverse range of industry sectors.

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Web: [www.draeger.com/en\\_uk/Home](http://www.draeger.com/en_uk/Home)

## ECH Elektrochemie Halle GmbH

### Stand 103

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Hydro International Ltd is a global company that provides advanced products, services & expertise to help municipal, industrial & construction customers to improve their water management processes, increase operational performance and reduce environmental impact. With over 30 years of experience and a reputation for engineering excellence, businesses & public organisations all over the world rely on Hydro International products & services to reduce flood risk, improve water treatment & protect the environment from water pollution. Join our expert team on stand 58 to find out how our Hydro-Logic® Smart Monitoring products and services can help you make water management decisions.

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## **IMI Precision Engineering** **Stand 4**

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### **Stand 110**

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## JR Pridham Services Ltd

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Web: [www.jrpservices.com](http://www.jrpservices.com)

JR Pridham Services Ltd (JRP) have been providing specialist MEICA related services since 1987 and together with expert knowledge and widespread industry experience we continue to provide cost effective quality solutions and services across the following core disciplines: Mechanical & Electrical Engineering, Systems & Telemetry Integration, Instrumentation & Control, 'WaSP' family of process optimisation solutions (Tankered Waste Reception, Wastewater Sludge Management & Control, Auto Decanting, Cake Loading, etc), iValve (Valve and Actuator solutions / accessories & services), Fabrication and additional support works to include minor civils, etc.

## KELLER (UK) Ltd

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## KISTERS AG

### Stand 14

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Oberforstbach, 52076, Germany  
Tel: +49 2408-9385 0  
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Web: [water.kisters.de/en/](http://water.kisters.de/en/)

KISTERS is a leader in water data management software, cloud services and big data analytics. The KISTERS Group develops, installs, hosts and operates software for public authorities, agencies (including the English, Welsh, Scottish, and Irish environment agencies), consulting engineers, and water utilities. Application areas include ground- and surface waters, water quality, supply and sewer networks, natural disasters (flood/drought), and meteorology. KISTERS builds holistic solutions integrating data from monitoring, weather radars/satellites, models, samples, labs, biological observations. HyQuest Solutions (KISTERS Group) manufactures hydrometeorological monitoring instrumentation and IP data loggers. KISTERS is active worldwide and operates a branch office in the UK.

## KOBOLD Instruments

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Tel: +44 1623 427 701  
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Kobold Instruments Ltd is the UK sales office for Kobold Messering GmbH, founded in 1980 by Klaus J Kobold, and today is one of the leading manufacturers of industrial instrumentation products. Product quality and service is paramount to the Kobold brand, and is as relevant today as when the Kobold brand was first established back in 1980. Kobold Instruments Ltd's UK office is based in Nottinghamshire. Our Sales Engineers all come from engineering and instrumentation based industries, and attend regular updated product training at our manufacturing bases in Germany. Our aim is to provide a professional and comprehensive service.

## Kuntze Instruments UK

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Email: [support@kuntze.com](mailto:support@kuntze.com)  
Web: [www.kuntze.com/en-us](http://www.kuntze.com/en-us)

## Labmedics (UK)

### Stand 127

D5 Culham Science Centre, Culham,  
Oxfordshire, OX14 3DB, UK  
Tel: +44 1865408315  
Email: [sales@labmedics.co.uk](mailto:sales@labmedics.co.uk)  
Web: [www.labmedics.co.uk](http://www.labmedics.co.uk)

Labmedics Ltd the leading UK and Ireland Distributor of Discrete benchtop Smartchem 450 and high capacity analysers Smartchem 600. More than 30 years experience in providing innovative and cost saving solutions in rapid discrete nutrient screening automation. Backed by service expertise and excellence second to none.

## LAR Process Analysers AG

### Stand 5

Neuköllnische Allee 134,  
Berlin, 12057, Germany  
Tel: +49 302789580  
Email: sales@lar.com  
Web: www.lar.com

In more than 30 years LAR Process Analysers has established itself as world's leading manufacturer of high-quality online water analysers. LAR is a proud member of Process Insights Holdings, a group of companies focused on process monitoring, analytics, control and safety. Since its foundation in 1986 the Berlin-based company has been developing, manufacturing and supplying customised online measurement systems for sum parameters such as TOC, TP, TNb, TOD, COD, BOD and toxicity. LAR's application-specific analysers are used for the optimization of industrial and municipal waste water treatment plants, for environmental monitoring, as well as for process control in various industries.

## Leading Edge Power

### Stand 146

Skyrrid Farm, Pontrilas,  
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Tel: +44 1981241668  
Email: sales@leadingedgepower.com  
Web: www.leadingedgepower.com

At Leading Edge we make it easy to provide off-grid power for telemetry and comms equipment at remote locations. We have many years experience of putting together small and large-scale hybrid off-grid power systems - these can include any combination of our own British-made wind turbines, solar panels, DC battery banks, inverter-chargers and even backup generators. Producing 30-35W continuously, our PowerBox is the only complete hybrid solar-wind on the market that fits into a single enclosure, can be easily transported on one standard pallet and setup in less than an hour on-site.

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## Lighthouse (UK) Ltd

### Stand 43

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WRAP signs; instruction labels; bin labelling, equipment identification, vehicle legal lettering; electrical marking, pipe marking; safety signs including warning labels and site signage can all be produced with ease on Lighthouse sign and label systems. Lighthouse systems are used extensively by Waste and Processing organisations throughout the UK helping them to improve processes, save time and save money. Visit our stand to see our systems in operation and see how Lighthouse can help you achieve substantial operational improvements and significant cost savings.

## Liquid Metering Instruments

### Stand 109

W Dudley St, Winsford, Cheshire, CW7 3AG, UK  
Tel: +44 1606 550583  
Email: sales@lmipumps.co.uk  
Web: www.lmipumps.co.uk

Based in Winsford, Cheshire, Liquid Metering Instruments Ltd was formed in 1981 as sole UK distributor for Liquid Metronics Incorporated, now Milton Roy dosing equipment. In 1988 LMI expanded into the design, manufacture, installation & commissioning of chemical dosing systems for water treatment applications. Supplying pumps and systems to a wide range of industries our products include: Solenoid, motor & Stepper motor metering pumps, transfer pumps, process controllers; pH, REDOX, Conductivity, Chlorine etc, flow meters, water meters. Associated products & Services includes :- Polymer make down systems, dosing tanks, agitators, calibration cylinders, tubing, spares, also offer repairs & servicing as well as product training.

## Lovibond Tintometer

### Stand 18

Lovibond House, Sun Rise Way, Amesbury,  
Wiltshire, SP4 7GR, UK  
Tel: +44 (0)1980 664800  
Email: water.sales@tintometer.com  
Web: www.lovibond.com

The Tintometer® Group is renowned in the field of water analysis. The trade-name Lovibond is synonymous with quality, accuracy and reliability and known internationally for innovative products for the precise analysis of water quality requirements in: drinking water, waste water, surface and ground water, untreated water and effluents, through to cooling water and boiler water. The Lovibond® brand of testing instruments and reagents offer rapid, consistent, precise monitoring for quality testing throughout the water cycle with instruments analysing over 130 parameters from A-Z including, but not limited to: on-line Turbidity, Alkalinity; pH; Chlorine; Chloride; TDS; Phosphate; Sulphite; BOD and COD.

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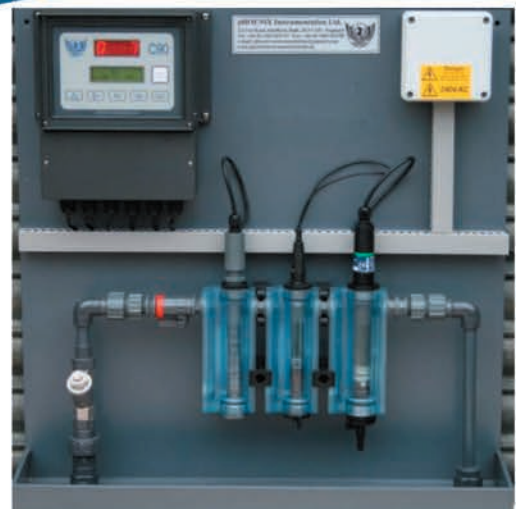
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[www.phoenixinstrumentation.co.uk](http://www.phoenixinstrumentation.co.uk)





## Lovibond Tintometer

### Stand 108

Lovibond House, Sun Rise Way,  
Amesbury, Wiltshire, SP4 7GR, UK  
Tel: +44 1980 664800  
Email: [water.sales@tintometer.com](mailto:water.sales@tintometer.com)  
Web: [www.lovibond.com](http://www.lovibond.com)

The Tintometer® Group is renowned in the field of water analysis. The trade-name Lovibond is synonymous with quality, accuracy and reliability and known internationally for innovative products for the precise analysis of water quality requirements in: drinking water, waste water, surface and ground water, untreated water and effluents, through to cooling water and boiler water. The Lovibond® brand of testing instruments and reagents offer rapid, consistent, precise monitoring for quality testing throughout the water cycle with instruments analysing over 130 parameters from A-Z including, but not limited to: Alkalinity; pH; Chlorine; Chloride; TDS; Phosphate; Sulphite; BOD and COD.

## LPRA

### Stand 54

The Innovation Farm, Sawbridgeworth Rd,  
Little Hallingbury, Bishop's Stortford,  
Hertfordshire, CM22 7QU, UK  
Tel: +44 1279 600440  
Email: [info@lpra.eu](mailto:info@lpra.eu)  
Web: [www.lpra.org](http://www.lpra.org)

## LTH Electronics Ltd



### Stand 40

Eltelec Works, Luton, Bedfordshire, LU4  
8EZ, UK  
Tel: +44 01582 593693  
Email: [sales@lth.co.uk](mailto:sales@lth.co.uk)  
Web: [www.lth.co.uk](http://www.lth.co.uk)

LTH Electronics has been delivering intelligent measurement solutions for water quality measurement and process control since 1967. We are a flexible organisation with specialist knowledge gained through more than 50 years of process experience. Offering a range of Contacting & Inductive Conductivity, pH, ORP, Dissolved Oxygen, Suspended Solids, Turbidity, Level, Flow, Pressure and Temperature instrumentation and sensors for many industrial applications. Service and technical support are an integral part of our business development and growth. In a global market our products are marketed and supported throughout the world by a network of LTH trained distributors offering country specific local support.

## Merck

### Stand 138

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Email: [pv.uk@merck.com](mailto:pv.uk@merck.com)  
Web: [www.merck.com](http://www.merck.com)

Merck KGaA, Darmstadt, Germany is a leading company for innovative and top-quality high-tech products in healthcare, life science and performance materials. Around 50,000 employees work in 66 countries to improve quality of life, foster the success of customers and help meet global challenges. Merck will present its broad range of air and water testing products at WWEM & AQE 2018. Our experts are looking forward to sharing their latest innovations on how to improve analytical quality assurance in water and air analysis. Whether you need to analyze drinking water, process water, wastewater, or air, we can help with our comprehensive

## Metasphere Ltd

### Stand 100 & 101

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Web: [www.metasphere.co.uk](http://www.metasphere.co.uk)

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## Meteor Communications (Europe)

### Stand 10

Martinfield, Welwyn Garden City,  
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Tel: +44 1727 899 990  
Email: [enq@meteorcommunications.co.uk](mailto:enq@meteorcommunications.co.uk)  
Web: [www.meteorcommunications.co.uk](http://www.meteorcommunications.co.uk)

Meteor Communications offer innovative environmental monitoring solutions to the Water Utilities sector. The ESNET Water Quality system is in use by customers across the UK including Thames Water, the Environment Agency and Atkins to provide high quality real time water quality, flow, image and weather information in real time. This is supported by the Meteor Water Quality Monitoring Services (WQMS) team providing a fully managed Water Quality service at over 150 sites across the UK.

## MAINSTREAM MEASUREMENTS LTD



### Stand 147

UNIT 4 Town Head Trading Centre,  
Ilkley, West Yorkshire, LS29 0PD, UK  
Tel: +44 01943830111  
Email: [bevbruce@mainstream-measurements.com](mailto:bevbruce@mainstream-measurements.com)  
Web: [www.mainstream-measurements.com](http://www.mainstream-measurements.com)

Mainstream Measurements Ltd is the UK manufacturer of the MAINSTREAM area-velocity flowmeters, loggers and transmitters for open channels and part-filled pipes. Mainstream's product range is noted for high performance, reliability and is cost competitive. Mainstream flowmeters feature a self-monitoring capability which simplifies installation and reduces maintenance by detecting any variation in performance. Ideal for a wide variety of water distribution and wastewater applications, Mainstream products are available worldwide through a network of distributors. Twitter: @OpenChannelFlow or @MainstreamAVM

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## **Metrohm UK** **Stand 7**

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Email: [events@metrohm.co.uk](mailto:events@metrohm.co.uk)  
Web: [www.metrohm.co.uk](http://www.metrohm.co.uk)

Metrohm Process Analytics manufacture online analytical analysers performing online or atline analysis for process control with high precisions and uptimes, day in and day out! Our analysers can be equipped to perform all kinds of analytical techniques such as: titration, photometry, voltammetry, ion-selective measurement, ion chromatography, and NIR spectroscopy. Dedicated analysers have been developed for environmental and ambient air applications. Our family of Process Analysers brings laboratory analysis online for continuous monitoring and control.

## **NIVUS Gmbh & NIVUS Ltd**



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Email: [david.miles@nivus.com](mailto:david.miles@nivus.com)  
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The NIVUS group is a leading developer, manufacturer and supplier of measurement instruments for water industry. For more than 50 years the company has been pointing the way ahead in measurement technology, continuously developing new products and practice-oriented solutions. Based in Eppingen, Germany, NIVUS operate seven international subsidiaries and co-operate with more than 40 distributors all over the world.

## **OTT Hydrometry Ltd** **Stand 19**

Unit 19 Jessops Riverside, Brightside Lane,  
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Tel: +44 01246 573480  
Email: [uksales@ott.com](mailto:uksales@ott.com)  
Web: [www.ott.com](http://www.ott.com)

The OTT Hydromet group manufactures products that enable water professionals to monitor the planet's most precious resource. Through the delivery of accurate reliable data, OTT's instruments and services provide essential tools to help protect the environment. From precipitation through surface and ground water to marine monitoring applications, OTT's measurement and communication technologies provide a complete picture of the water cycle. Adcon Telemetry was acquired in 2011, and Sutron and Lufft joined the OTT Hydromet Group in 2015, which means that the company is able to offer the best sensors and data handling technology for every application.

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Oxford Instruments' MQC+ benchtop analyser is used to measure fat, oil and grease (FOG) for waste water monitoring. In contrast to hazardous and unreliable solvent extraction techniques, MQC+ provides a solvent-free method that is quick and easy to perform, simple to calibrate and with very simple sample preparation, making it ideal for non-specialist laboratory personnel. Visit us at stand 132 to discuss your requirements.

## **Palintest** **Stand 111**

Palintest House, Team Valley,  
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NE11 0NS, UK  
Tel: +44 1914910808  
Email: [sales@palintest.com](mailto:sales@palintest.com)  
Web: [www.palintest.com](http://www.palintest.com)

Palintest is a leading manufacturer of water analysis technologies. Providing equipment for water quality monitoring and disinfection control, our equipment empowers individuals to make water quality decisions with confidence. Backed by over 70 years of research, our assured technologies are used in over 100 countries and across a variety of applications to protect lives and the environment, assist with regulatory compliance, and facilitate system optimisation. Manufactured in the UK, our assured technologies are used globally in a variety of applications to protect lives and the environment.


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## PG Instruments

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Tel: +44 1455 220131  
Email: [sales@pginstruments.com](mailto:sales@pginstruments.com)  
Web: [www.pginstruments.com](http://www.pginstruments.com)

PG Instruments Limited is a British Manufacturer of Scientific Instruments, based near Leicester and was formed in 2004. We manufacture ICP-OES Spectrometers, Atomic Absorption, UV-Visible Spectrophotometer, FTIR, Water Purification for laboratories. We have recently introduced our ICP5000 Dual View OES Spectrometer, with a high specification but competitive pricing and have excellent references for the instrument, such as Rolls Royce in the UK with a number of installations overseas. PG Instruments offer FULL service and technical support for all of our instruments in both the UK and overseas.

## Phoenix Contact Ltd

### Stand 61

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## pHOENIX Instrumentation Ltd



pHOENIX Instrumentation Ltd

### Stand 72

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Email: [phoenix-instrumentation@btconnect.com](mailto:phoenix-instrumentation@btconnect.com)  
Web: [phoenixinstrumentation.co.uk](http://phoenixinstrumentation.co.uk)

pHOENIX Instrumentation specialise in the supply and manufacture of water quality instrumentation for a variety of parameters including Ammonia, Fluoride and Turbidity. They also specialise in the design and installation of customised monitoring stations in static or mobile GRP enclosures for Final Effluent, River and drinking water intakes.

## Photonic Measurements

### Stand 126

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Email: [sales@photonicmeasurements.com](mailto:sales@photonicmeasurements.com)  
Web: [www.photonicmeasurements.com](http://www.photonicmeasurements.com)

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### Stand 114

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Email: [jmachin@procentec.com](mailto:jmachin@procentec.com)  
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PROCENTEC is an independent company, concentrating all its products and services on PROFIBUS, PROFINET and Industrial Ethernet.

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Web: [www.pma.uk.com](http://www.pma.uk.com)

As a provider of online instrumentation to both the water industry and industrial customers for over 30 years, PMA are proud to bring novel, accurate and reliable instrumentation to the UK. Representing brands such as s:can, Compass, 3S, Turner Designs Hydrocarbon Instruments and Galvanic Applied Sciences in the UK. As a reagent manufacturer and with an experienced base of in the field engineers PMA can offer a complete solution when it comes to supporting our instruments.

## Processplus Ltd

### Stand 30 & 31

Lewis House, Unit 10, Dickson Street,  
Elgin Industrial Estate, Dunfermline,  
Fife, KY12 7SL, UK  
Tel: +44 1383825343  
Email: [admin@processplus.co.uk](mailto:admin@processplus.co.uk)  
Web: [www.processplus.co.uk](http://www.processplus.co.uk)

Processplus is a multi-disciplined specialist instrumentation engineering company. A complete one stop single source solution provider from design, manufacture & project management to automation & process control. Delivering process solution led engineering projects for 30 years to the water & process industries. Supplying comprehensive control, instrumentation & electrical solutions from globally recognised and experienced partners. A Scottish Water framework supplier for over 14 years we pride ourselves on providing cost effective, environment friendly water quality measurement engineering solutions.

## PROFIBUS and PROFINET International - PI UK

### Stand 114

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Manchester, Cheshire, M1 1AN, UK  
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PROFIBUS and PROFINET International (PI) is the largest automation community in the world and responsible for PROFIBUS and PROFINET, the two most important enabling technologies in automation today. The common interest of our global network of vendors, developers, System Integrators and end users covering all industries lies in promoting, supporting and using PROFIBUS and PROFINET. Regionally and globally about 1,400 member companies are working closely together to the best automation possible. No other fieldbus organization in the world has the same kind of global influence and reach. That's why PROFIBUS and PROFINET are world leaders in industrial networking.

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# ProMinent®

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Web: [www.prominent.co.uk](http://www.prominent.co.uk)

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## Pulsar Process Measurement Ltd

### Stand 116 & 117

Cardinal Building, Enigma Commercial Centre,  
Sandy's Road, Malvern,  
Worcestershire, WR14 1JJ, UK  
Tel: +44 1684 891 371  
Email: [gemma.white@pulsar-pm.com](mailto:gemma.white@pulsar-pm.com)  
Web: [www.pulsar-pm.com](http://www.pulsar-pm.com)

Pulsar Process Measurement manufacture and develop non-contacting and non-invasive level and flow instrumentation. Pulsar are a leading supplier to the Water and Waste Water industry including low power velocity x area solutions, Ultrasonic and FMCW RADAR sensors.

## Pyro Science



### Stand 136

Hubertusstrasse 35, Aachen, 52064,  
Germany  
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PyroScience is a manufacturer of optical sensors based on unique detection technology featuring ultra-fast response times, low interferences and power consumption. The product line ranges from compact optical oxygen meters combinable with a broad range of fibre-based and smart contactless sensor heads for optical temperature and oxygen measurements in aqueous and gas samples. Probes are also available for measurements in organic solvents, microfluidics and high-throughput screening, as well as various OEM modules. New optical pH sensors are available in various formats for application in water- and wastewater-treatment, aquaculture, marine research, life sciences and environmental monitoring.

## QCL

### Stand 28

Riverside, Forest Row Business Park,  
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QCL has been serving laboratory scientists in the UK for more than 35 years, providing innovative, rapid analytical testing products for a wide range of industries. We source equipment from around the world, using our expertise to select the most advanced, robust and cost-effective analytical solutions. We maintain a high level of technical expertise enabling us to deliver excellent customer service, developing operating procedures and calibrations to ensure that our customers can achieve the accuracy and efficiency required from their testing regimes.

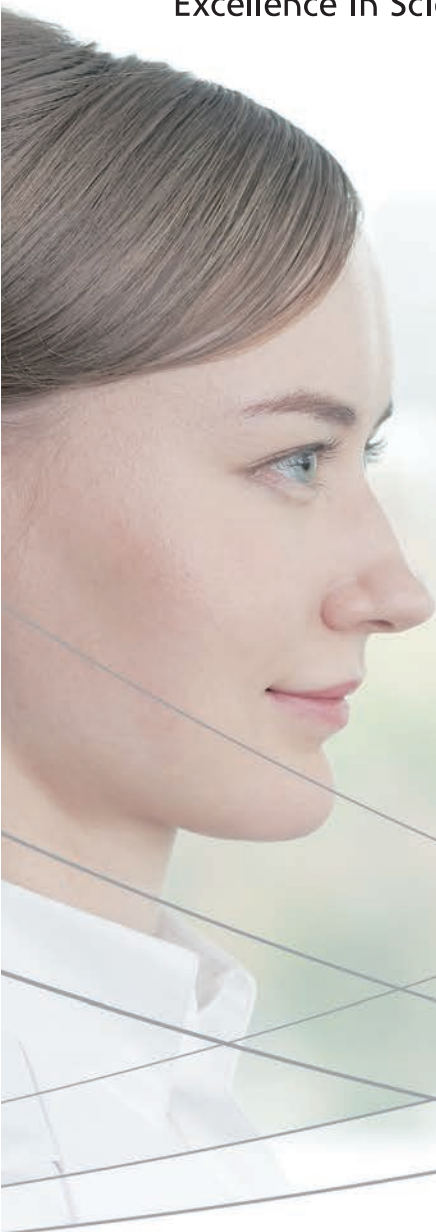
## Radio Data Networks



### Stand 54

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Hertfordshire, CM22 7QU, UK  
Tel: +44 1279600440  
Email: [sales@radio-data-networks.com](mailto:sales@radio-data-networks.com)  
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Web: www.skalar.com

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Web: www.status.co.uk

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## SWIG (Sensors for Water Interest Group)

### Stand 26

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Web: www.swig.org.uk

The Sensors for Water Interest Group (SWIG) is a not for profit, information, ideas-exchange, and networking group with a diverse UK-wide membership. SWIG focuses on the use of sensor and associated technologies for measurement and control in water and wastewater treatment processes and infrastructure, and in natural environments and waters. Our networking activities include a varied programme of technical workshops covering all aspects of water sensing, which offer a cost-effective means of keeping up-to-date with sensor developments, new technologies and regulations. Invited speakers and enthusiastic audiences are able to debate issues of measurement and control in water and wastewater.

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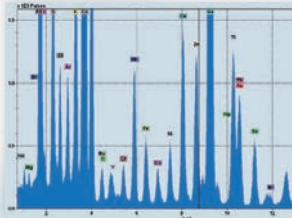
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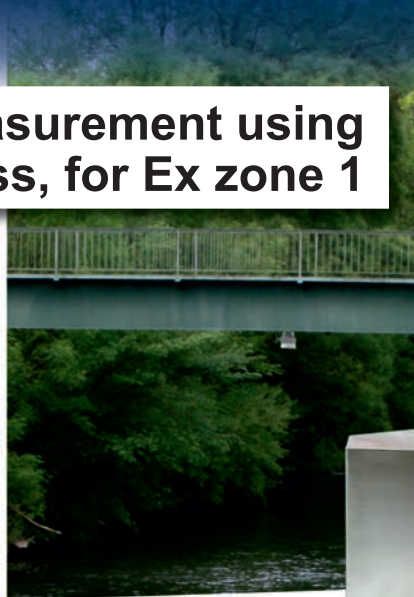
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## The GAMBICA association Ltd

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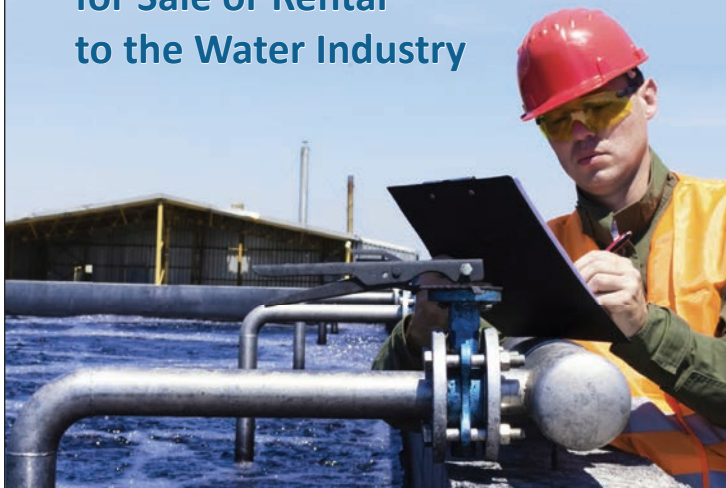
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# WWEM 2018

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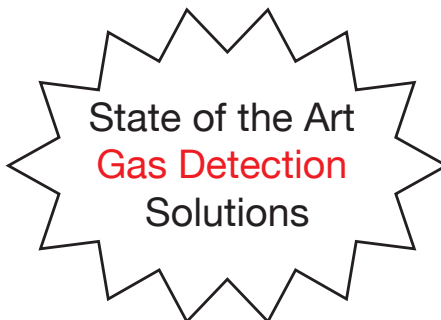
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