

# PUMP ACTION

THE OFFICIAL NEWSLETTER OF THE PUMP CENTRE

SPRING 2017

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**PUMP CENTRE  
CONFERENCE &  
EXHIBITION**  
11TH MAY 2017  
SEE P18 FOR MORE  
DETAILS

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# 2017 Conference and Exhibition

Thursday 11 May 2017  
The International Centre, Telford

## TOTEX: Pumping System Efficiency, Reliability and Optimisation

The Water Industry's focus on TOTEX came into effect with AMP 6 and created a move away from the traditional operational and capital expenditure model. TOTEX offers the best solution because it is the lowest total cost over the whole life of an asset.

Learn about TOTEX from the experts and key players across the supply chain.

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- Over 100 major exhibitors
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- Superb networking opportunities
- New product zone
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- Free lunch and refreshments\*

\*Subject to availability



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or contact Jim Eaves on 07968 707753  
[jim.eaves@arcadis.com](mailto:jim.eaves@arcadis.com)

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## Editor's Column

In this post BREXIT era the world seems a different place with a lot of uncertainty as to what the future holds. Ultimately this will affect all aspects of UK business until things become clearer, it will be interesting to see how things develop over time!

At the Pump Centre we are concentrating on our core objective of "Technology Transfer" and we are endeavouring to raise awareness of the latest technical developments. One area where we are achieving this is via our events & conferences.

Late last year we held an awareness day within the Water and Wastewater Environmental Monitoring Exhibition (WWEM) on the topic of Building Information Modelling (BIM). This sounds like a very specific topic that would only apply to the building industry, this is not the case! The use of BIM is now spreading into all different industry sectors.

At the event, which was held at the International Centre, Telford in November the agenda was to raise the level of understanding of how BIM will be used by different parts of the supply chain and to give delegates an idea of what they need to do within their own company to bring themselves up to speed. The event was well received by the audience of about 50 delegates, who listened to presentations from BIM experts from companies such as: Environment Agency, Black & Veatch, CH2M, Co-Builder, Xylem and Viking-Johnson. A great point made by one of the speakers was that BIM would be better summarised as "Better Information Management" and the momentum for its implementation

across UK industry was increasing and in one way or another it would affect everyone.



Technology Transfer is also key to the Pump Centre's Annual Conference & Exhibition. This year the conference is being held on Thursday 11th May at the International Centre, Telford. The main technical theme of the conference is based on "TOTEX: Pumping System Efficiency, Reliability & Optimisation".

The Water Industry's focus on TOTEX came into effect with AMP 6 and created a move away from the traditional operational expenditure and capital expenditure model. It is thought that the TOTEX approach offers the best solution because it focusses on the lowest total expenditure (TOTEX) over the whole life of an asset. For pumped systems TOTEX can be reduced by improvements in both efficiency and reliability and by optimisation of the process.



At the conference, there will be many technical presentations and exhibition stands focussing on the various aspects of TOTEX reduction and how it can be achieved. More details about the conference and exhibition can be found on pages 18 to 24.

I hope to see you all at the conference - to register and for all the latest details please go to the Pump Centre website – [www.pumpcentre.com](http://www.pumpcentre.com).

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## HUBER Technology

## Exsel Pumps

Exsel Pumps is seen as "The Credible Alternative" to the traditional national pump hire companies.

Exsel Pumps operate nationwide with depots in the South, South East and North of the country. Part of the family owned Turner Group of companies, with a turnover of £250m and over 2,000 employees.

Exsel is focused on providing Customers with temporary sewage pumping solutions. Independent of any manufacturers therefore offering the right equipment for the job. Exsel offer innovative solutions with larger pump and pipework offerings including installation up to 48" discharge (1,200mm) diameter with "Genuine" rag and solids handling capability. The comprehensive fleet is fully supported by our dedicated professional team with a real 'Can do' attitude. The pumps offer a unique carbon footprint and excellent fuel/energy economy with energy savings of up to 80%.

EXSEL PUMPS – "Who Else?"

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HUBER Technology is a leading supplier of stainless steel waste water treatment equipment. We offer high quality innovative solutions for all your waste water requirements for both Municipal and Industrial markets.

HUBER's headquarters are based in Chippenham, Wiltshire and our regional centres in Rotherham, Perth and Portadown provide dedicated installation and a full after sales service programme to customers in these areas.

HUBER equipment is designed and manufactured in Germany where we have state of the art manufacturing facilities and incorporate the very latest production techniques. Machines are customised to meet individual customers' requirements at our facility in Chippenham.

The range of products includes;

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- Washing, conveying and compacting of solids and screenings
- Sludge screening, thickening, dewatering and drying
- Grit removal and treatment
- Tertiary treatment
- Anaerobic digestion, pre and post digestion treatment
- Industrial waste water treatment

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



## ACE Innovation and Sustainability...

Aquatic Control Engineering Ltd (ACE) have been providing high quality, innovative water flow control solutions to the UK and Irish marketplace for over 20 years. ACE offer consultation, design, supply, project management, installation and commissioning services for land drainage, flood alleviation/prevention and water control for treatment works.

Proudly at the forefront of the industry in research,

design and development to offer the best low maintenance products manufactured from durable and proven materials/techniques. ACE offer a holistic approach to water flow control and now represent a vast product range including Fish Friendly Land Drainage Pumps (Axial and Archimedean), Penstocks, Flapvalves, WaStop Check Valves, Stop Logs, Tilting Weirs and Wind Pumps. ACE can also provide full

turnkey M&E packages for water control systems.

ACE has built lasting relationships and attracted sizeable repeat customers such as the Environment Agency and their framework contractors, Anglian Water, United Utilities and Internal Drainage Boards. Our team are dedicated to always offering innovative and sustainable solutions to suit your needs.

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





system is around 100 miles in length. The team work on anything from 5mm tubing up to 750mm pipe lines as well as 2m drains, ½ kW drainage pumps to 200kW storm units, 24v peristaltic to 3.3kV fire pumps, variety certainly is the spice of life.

With the constant demands of working on and around an operational airfield, this small team of 32 ensure that Heathrow Airport's water systems



# Heathrow Airport

Heathrow Airport needs no introduction, as the largest airport in the UK it handles in excess of 70 million passengers a year through its 4 terminals (Terminal 1 is currently closed awaiting redevelopment), with an aircraft movement approximately every 40 seconds via its 2 runways. This small city (1227 hectares, approximately 80,000 workforce, power consumption equivalent to city size of Southampton) is operational 24/7, 365 days a year and is maintained by dedicated maintenance teams spread across its various infrastructure - terminals, airfield, generation, electronics, water, estates, and even rail!

The Water Services team look after the external, and some internal, water infrastructure at Heathrow,

ranging from the potable water into the site, to the removal of the surface and foul water, as well as providing the supply to the vast number of fire hydrants around the airfield. Keeping the water flowing is essential to the ethos of Making Every Journey Better, and ensuring that taxiways, runways, roads and buildings drain helps keep the airport operational.

With over 300 pumping stations, from groundwater sumps, to potable booster stations, borehole pumps, foul water pumping stations and a 4km surface water drainage tunnel, as well as a number of lagoons and 2 rivers, there is a vast amount of infrastructure to maintain. The new Terminal 2 alone has over 50 pumping stations and the airfield fire hydrant

remain flowing, providing an essential service not just to our passengers, but everyone who uses or works at the UK's biggest and, one of the world's, busiest airports.

[www.heathrow.com](http://www.heathrow.com)

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Making every journey better



# Unrivalled Clean Sustainable Technology

## High Efficiency Turbo Blowers

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APG-Neuros offers sustainable and affordable fully integrated high efficiency turbo blowers and aeration systems for municipal and industrial customers. With over 1100 units installed and 120 on order, APG-Neuros provides clients with the most proven product supported by a strong engineering and well-established service network throughout North America and Europe.

Our high speed turbo blower is considered the industry leader for high efficiency, quality and performance. APG-Neuros product superiority is attributed to the introduction and application of the most technologically advanced and proven

components from the aerospace industry, such as the air bearing, permanent magnet synchronous motor (PMSM) and the programmable logic controller (PLC) based aeration control system.

Customer benefits include energy savings of up to 40%, minimal maintenance requirements, no requirement for oils or greases, elimination of heat rejection, vibration-free operation, noise reduction, smaller footprint, and lower installation costs compared to conventional products.



**Your Budget does more when your blowers consume less and provide reliable operation.**

**Major UK Customers:**

**Wessex Water**

**Thames Water**

**Anglian Water**

**Dwr Cymru Welsh Water**

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And needless to say  
energy-efficiently  
defined.**



### Wilo-Zetos K 8.

The demand for drinking water is growing, as is the amount of land used for agricultural purposes. As a system expert Wilo has recognised that as a result of this, raw water must be promoted in the most energy-efficient and economic way. Our best-in-class solution for you: Wilo-Zetos K 8. The flexible submersible pump sets standards with a pump efficiency of up to 84.5% and an overall efficiency of 75%. It can be precisely configured to your needs and is also suitable for the demanding processes in the raw water intake. Ideal for municipalities but also for agriculture. Thanks to our service feature Try & Buy, you can test Wilo-Zetos K 8 in your system.

**Come and see Wilo-Zetos K 8 at the Pump Centre Conference.**

Learn more at:  
[www.wilo.com/watermanagement](http://www.wilo.com/watermanagement)

Pioneering for You



# Young Engineer of the Year Award 2017



2nd Round Candidates & Judges from the Pump Centre Young Engineer Award 2016

The first round of judging in this year's Young Engineer of the Year Award has already taken place and after a very close fought contest the following candidates have made it through to the 2nd round of judging.

#### Apprentice category

- Heeran Basi (Severn Trent Water)
- Stefan Sadnani (Anglian Water)

#### Technician category

- Abigail Stephenson (Gilbert, Gilkes & Gordon Ltd)
- Adam Barbour (Scottish Water)

#### Professional category

- Christina Man (Ove Arup)
- Tom Hammond (Siemens)
- Jamie Mills (Xylem Water Solutions)

The second round takes place on the 22nd March at the Calcot Hotel, Reading and will involve all the candidates giving a presentation followed by an interview about the details they have highlighted on their nomination form, their engineering experiences and their career to date. The morning session will concentrate on judging the Apprentice & Technician candidates and the afternoon will focus on the Professional candidates.

Based on what happened in 2016 the judges are expecting to be really impressed by some very high quality candidates. All the candidates who reach 2nd round of judging will be invited with their mentor to the annual Pump Centre Conference Dinner, on Wednesday 10th May, where the presentation will be made to the winners. The venue for the dinner is the Ironbridge Suite at the International Centre, Telford.



Left photograph Tim Battersby and right photograph Scott Proverbs accepting their Young Engineer of the Year 2016 commemorative certificates from Bob Went, Pump Centre Chairman.

## Past Winners of the Pump Centre Young Engineer Award

Winner	Company
<b>2016</b>	
<i>Apprentice/Craft Category</i>	
Tim Battersby (Joint winner)	Reid Lifting Ltd
Scott Proverbs (Joint winner)	WES (UK) Ltd
<i>Professional Category</i>	
James Ballard	Severn Trent Water
<b>2015</b>	
<i>Apprentice/Craft Category</i>	
Josh Baynham	SPP Pumps
<i>Professional Category</i>	
Sam Walker	Gilbert, Gilkes & Gordon Ltd
<b>2014</b>	
<i>Apprentice/Craft Category</i>	
Chris Walker	Wessex Water
<i>Professional Category</i>	
David Pattinson	ATKINS
<b>2013</b>	
<i>Apprentice/Craft Category</i>	
Ben Welton	Gilbert, Gilkes & Gordon Ltd
<b>2012</b>	
<i>Apprentice/Craft Category</i>	
James Forder	ERIKS
<i>Professional Category</i>	
Ben Gannon	Severn Trent Water
<b>2011</b>	
<i>Apprentice/Craft Category</i>	
Lee Meekison	ITT Water & Wastewater
<i>Professional Category</i>	
Mark Horsley	CEMA
<b>2010</b>	
<i>Apprentice/Craft Category</i>	
Craig Viner	Severn Trent Water
<i>Professional Category</i>	
Lewis Rogers	Black & Veatch
<b>2009</b>	
<i>Apprentice/Craft Category</i>	
Nicole Cuerden	Biwater Treatment
<i>Professional Category</i>	
Mellish Kett	Severn Trent Water
<b>2008</b>	
Nick Wills	AESSEAL

# New low power Centre Drive for Rotating Distributors



Ham Baker's Spares Maintenance & Service division has unveiled a new low-power, low carbon footprint Centre Drive System for rotating distributors.

Achieving greatly reduced running costs due to its small motor, the innovative lightweight design of the Ham Baker Centre Drive System is easy to install and significantly improves manual handling.

Suitable for continuous operation of new or existing distributors of any make, the new System's large drive ring provides more torque for control rotation, whilst its variable speed also gives enhanced process control and a variable wetting rate. In

addition, the flushing rate successfully reduces biomass, improves oxygen transfer and suppresses flies. For enhanced flexibility of flushing time, and to maximise the biological process of the distributor, the rotation speed can be altered by a variable timer.

With no hydraulic parts, this new Centre Drive System is much easier to maintain than conventional units. The durable design with reduced side loads produces a prolonged asset life, with Ham Baker able to provide full technical support and maintenance.

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



## Pump Centre Membership

Have you considered joining the Pump Centre?

The Pump Centre has over 150 company members who benefit from:

- Technical support
- Discounted training
- The opportunity to participate in projects & events
- A free stand at the UK's premier pumps & pumping exhibition
- Great networking opportunities
  - Meetings
  - Awareness days
  - Website
  - Newsletter & Members directory



If your company is interested in pumps & systems and the Water Industry  
 Contact Jim Eaves on 07968 707753.  
 Email [jim.eaves@arcadis.com](mailto:jim.eaves@arcadis.com)

[www.pumpcentre.com](http://www.pumpcentre.com)



# Bedford Pumps multistage pumps scale the heights for Coppermills



Replacement pumps from Bedford Pumps Ltd

Bedford Pumps, one of Europe's leading manufacturers of conventional and submersible pumps for the water and wastewater industries, has been awarded the contract to supply high lift pumps to Thames Water for its Coppermills Advanced Water Treatment Works (AWTW).

Coppermills AWTW is one of Thames Water's network of sites providing drinking water for London. The raw water is abstracted from the Lea flood relief channel and the New River and then stored in twelve reservoirs which feed the treatment works. Following treatment the potable water is pumped into supply by the high lift pumping station at Coppermills AWTW.

The existing pumps at Coppermills AWTW were installed when the station was constructed back in the 1960's. Bedford Pumps will initially supply two new high lift clean water pumps to supplement the existing old pumps. This will ensure a more reliable, high efficiency process.

Bedford Pumps will work with SMBJV, (Skanska, MWH & Balfour Beatty Joint Venture) to supply a pair of Two-Stage Suspended Mixed Flow Bowl Pumpsets which will be installed in a vertical dry well suspended arrangement in order to fit



Existing pumps at Coppermills AWTW

into the existing tight space with access to the motors outdoors at ground level.

The pumps will each deliver a flow of 1,053 litres per second at 53m head via 3.3kV 800 kW variable speed motors.

This is not the first pumping solution that Bedford Pumps has delivered for the Coppermills site. In 2009 Bedford installed submersible bowl transfer pumps and a tunnel drainage pump at Coppermills WTW to facilitate a "dual pumping process" between Coppermills and the Thames Water Ring Main (TWRM). This was part of the £150M TWRM project, which involved tunnelling

around London linking transfer pump shafts with water treatment works and pumping stations along the route.

Thames Water has a large existing installed base of Bedford Pumps products performing both clean water and waste water duties. Bedford Pumps is delighted to be able to assist the company in its latest venture.

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

## Siemens takes water measurement to the next level



HydroRanger 200 and MultiRanger 200 ultrasonic level transmitters enhanced with new features including faster commissioning, improved Human Machine Interface, Graphical Start Wizard and wider communication protocols

Siemens has added new features to two of its ultrasonic level controllers to raise the bar for the industry standard in water level measurement.

The MultiRanger 200 and HydroRanger 200, established market-leading products, have been enhanced with new technology and design alterations to deliver a number of benefits to users.

Both products feature an improved Human Machine Interface with local four-button programming and menu-driven parameters, for unparalleled ease of use. Setup is speedier than before - Siemens promises under a minute - thanks to the addition of graphical Quick Start Wizards, as well as a redesigned enclosure with protected wiring compartment and removable terminal blocks.

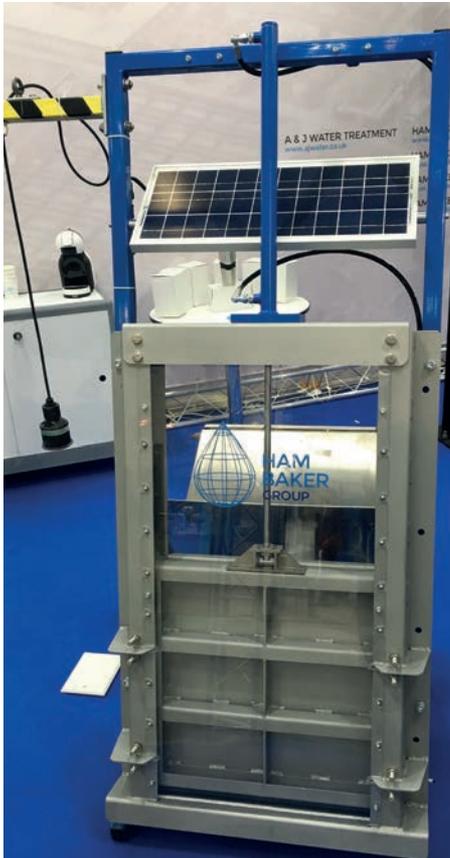
The controllers also offer a wider range of communication options including increased interaction with the popular Profibus DPV1 industrial protocol. By connecting them to other products, users can enhance the capabilities of the HydroRanger/MultiRanger 200. For example, they are compatible with Siemens Echomax ultrasonic non-contacting transducers, which are impervious to dust, moisture, vibrations, flooding, and high temperatures. When paired with a submergence shield, they have the ability to sense flooding or overflow conditions.

Suitable for use across industry sectors, the controllers have applications ranging from water/wastewater monitoring via pumping stations or open channels, to inventory management of chemicals or liquids and truck load-outs. They provide highly accurate measurements of level, flow, differential level and volume conversion, with additional alarm and pump control functions. For instance, the patented signal processing technology Sonic Intelligence differentiates between true and false echoes which can be caused by electrical noise.

Derek Moore, UK Product Level Manager, Siemens UK & Ireland, comments: "For nearly 30 years, the HydroRanger 200 has remained the industry standard for level measurement across a number of applications. Our continued investment in this solution, as well as our wider industrial measurement portfolio, demonstrates our commitment to helping manufacturers meet industry challenges now, and in the future."

[www.siemens.com](http://www.siemens.com)

# New Solar-Powered Penstock from Ham Baker



Flow control specialist Ham Baker, manufacturer of penstocks for over a century, has unveiled a new range of Solar-Powered Penstocks, which can be easily retrofitted to existing manually-operated systems for the control of liquid flow.

This innovative new Ham Baker penstock is designed with a self-cleaning solar panel for maximum capture, offering a life cycle of 25 years, with a minimum of 10-years life for the panel's almost maintenance-free batteries.

As well as reduced energy bills, the Ham Baker Solar Powered Penstock offers short payback times depending on size.

Designed with state-of-the-art software, manufactured and rigorously tested at its own UK manufacturing plant, Ham Baker's proven penstocks are available in traditional cast iron, all grades of stainless steel (including Duplex), aluminium or plastics, to suit the application.

Ham Baker can also provide solar powering for the actuation systems used on its flow products such as rotary electric, linear (hydraulic/pneumatic).

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

# Börger's Pumps are the right angle for Maintenance at Minworth



Within a very confined banded area at Severn Trent Water's Minworth Sewage Treatment Works, the upright design of Börger's recently installed rotary lobe pumps has significantly reduced maintenance costs and downtime.

Working with the global engineering, construction and management organisation MWH Treatment, Börger's Maintenance-In-Place (MIP) pumps have replaced progressive cavity units that had to be completely removed to be repaired or serviced.

Installed with angled (helical bevel) direct drive gearboxes (rather than belt drives) to allow installation, the energy-efficient 5.5kW PL200

Börger pumps can have all of their wear parts replaced in situ by the maintenance team, without dismantling any pipe or drive systems.

This new order for Börger follows the success of its previous rotary lobe installation at Minworth where its pumps also reduced maintenance requirements in a difficult belt thickener sludge discharge application. The jetting out of fat has been reduced from around every three weeks (when progressive cavity pumps were in operation) to intervals of just every four months by using Börger's rotary lobe pumps.

[www.boerger.com](http://www.boerger.com)

# Flow Control specialists make key Export appointment



Julian Lowe

Julian Lowe is Ham Baker's new Group Export Director.

With Ham Baker Group (turnover £35M) now exporting extensively to the Middle East, the Far East, the U.S., Australia and South Africa, Julian will look to further strengthen sales from an increasingly growing flow-control portfolio that includes penstocks, process equipment, valves and flood control.

Previously in leading national sales roles with Hidrosta, Jacopa and Mapal Green Energy, Julian was also Business Manager for three and a half years at Grundfos Management A/S.

This latest appointment follows Ham Baker's expansion of its Pumps & Renewables Division with two new Area Sales Managers, plus two new Group Business Development Directors.

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

# TOTEX – pumped with success?

Energy costs represent the single largest operating cost for most water companies and so have a major part to play in the move to Totex. Given that we are aware that good collaboration with stakeholders is key to making good Totex decisions, where should the industry be looking? Well coming at this from the perspective of pumps and pump solutions, at Grundfos we know the significant opportunities that pumps can offer the industry.

Take a pumping system solution from a total life cycle viewpoint. We know that 85% of the pumps associated cost over its lifetime is accounted for by the energy they consume, with only 5% relating to the purchase price. The remaining 10% relates to the maintenance cost.

Additionally the UK pump market UK can be divided into new and replacement pumps. Therefore, the opportunity exists at the point of replacement to review the pump(s) to ensure that it is the best specification to meet the current and future needs of the system. This is an opportunity that is frequently missed and in itself could offer huge savings if additional consultation was sought.

At Grundfos, we can quote many instances where the value of seeking some additional advice at this point can reap rewards as is shown in these real life replacement examples: (Shown in table below).

It is easy to look at pumps as being a component part as opposed to an actual solution in themselves. However, what a good pump manufacturer can offer the industry is so much more than just a pump. They

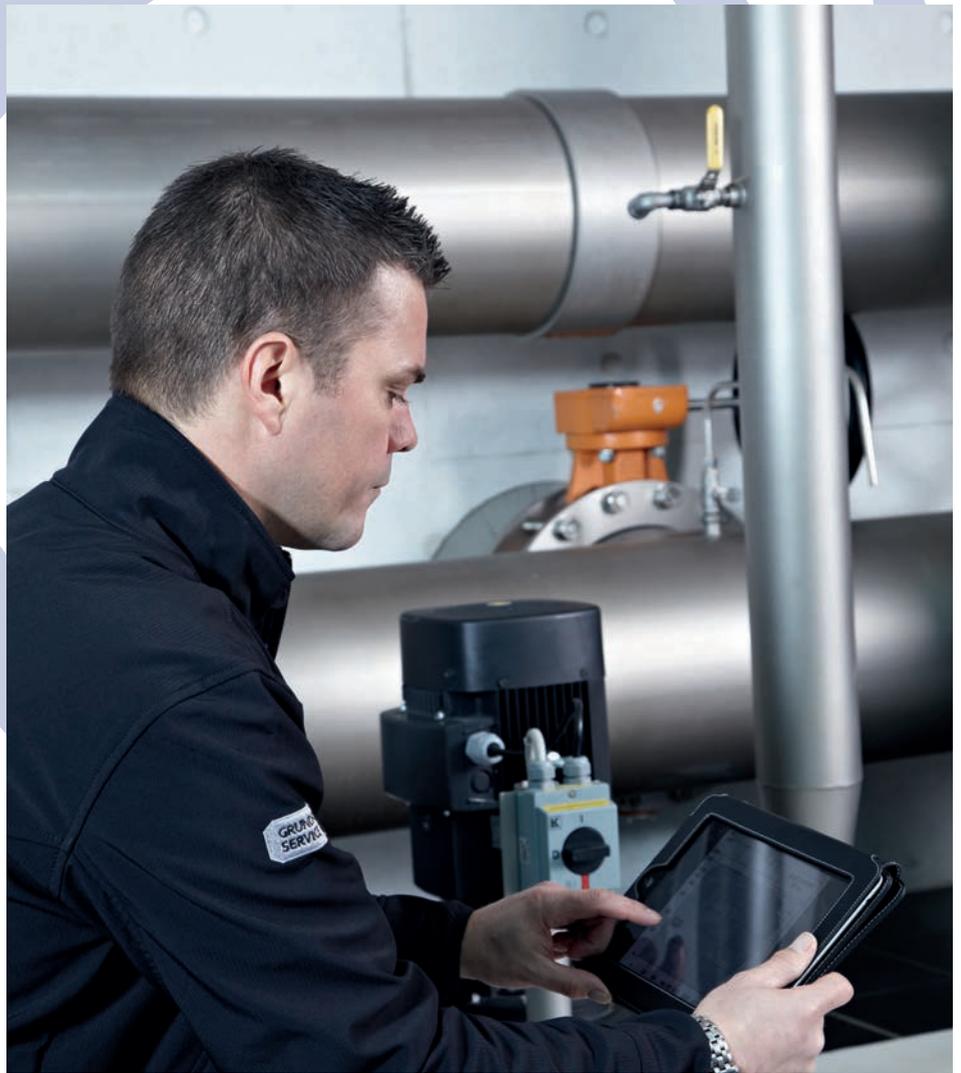
can deliver innovation not just as a standalone, but as a part of a fully integrated system. This also goes beyond the pump to include better pump control to optimise pump use, efficiency and maintenance.

## Making Totex work in practice:

The future success of Totex rests in getting a range of factors right. Some of these factors are perhaps a

little alien to the industry, as they involve not just the obvious aspects of getting the business talking collaboratively, but also of encompassing the need to be more inclusive and open-minded.

[www.grundfos.com](http://www.grundfos.com)



EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
<b>YEARLY SAVINGS</b> £59,330	<b>YEARLY SAVINGS</b> £33,374	<b>YEARLY SAVINGS</b> £10,643
<b>PAYBACK TIME (YRS)</b> 0.34	<b>PAYBACK TIME (YRS)</b> 1.66	<b>PAYBACK TIME (YRS)</b> 1.04
<b>ENERGY SAVINGS (KWH/YR)</b> 741,628	<b>ENERGY SAVINGS (KWH/YR)</b> 370,820	<b>ENERGY SAVINGS (KWH/YR)</b> 106,434
<b>EMISSION REDUCTION (CO<sub>2</sub>T/YR)</b> 355.24	<b>EMISSION REDUCTION (CO<sub>2</sub>T/YR)</b> 170.21	<b>EMISSION REDUCTION (CO<sub>2</sub>T/YR)</b> 50.98
<b>INVESTMENT</b> £20,790	<b>INVESTMENT</b> £59,436	<b>INVESTMENT</b> £11,702

Taken from a survey in October 2015 by Waterbriefing regarding AMP6 and Totex

# Wessex Water Completes Multiple Site SCADA Migration

Wessex Water is a major utility providing almost 1.3 million customers with around 285 million litres of water a day, as well as removing and treating over 481 million litres of sewage from around 2.67 million people at 405 treatment works, seven days a week.

A technology framework agreement was established between Wessex Water and Siemens some seven years ago, hence from 2010 all control and monitoring systems for Wessex Water’s capital programme made heavy use of Siemens PLC, WinCC SCADA, HMI and communications products.

Wessex Water’s engineering and construction in-house automation team led by Dave Mining (Technical and Development Manager - Automation), in collaboration with technical support staff from Siemens have developed standard PLC software, standard SCADA / HMI configurations, standard software / hardware interfaces for Siemens fixed and variable speed drives and standard control system architectures.

A scheme was approved to replace unsupportable legacy SCADA systems on 23 of Wessex Water’s clean and waste water sites. By selecting WinCC as the replacement SCADA solution, the company could add to the SCADA systems provided for AMP5 / AMP 6 capital schemes and would have a common SCADA platform across 40 of its largest sites.

Dave Mining explains: *“Our legacy SCADA hardware, software and operating systems could no longer be properly supported. In addition it was not possible to accommodate any expansion of site control and monitoring systems within the legacy SCADA systems. Clearly this represented an unacceptable business risk.”*

The migration project took place over an 18 month period, with the work carried out by a specially recruited small team. The teams had no previous SCADA experience, but were given intensive SCADA and PLC training by automation staff alongside support provided by Siemens. *“It was very rewarding to see how well the training was received and how quickly the team were able to implement and extend standard solutions within the WinCC environment. Within a short period of time, the team were able to procure and configure server hardware, procure software and licensing, carry out the conversion, go through extensive office testing before finally installing and testing on site. Each system was handed over to Wessex Water’s Operations Technical Support Group (TSG) for ongoing maintenance and support.”*

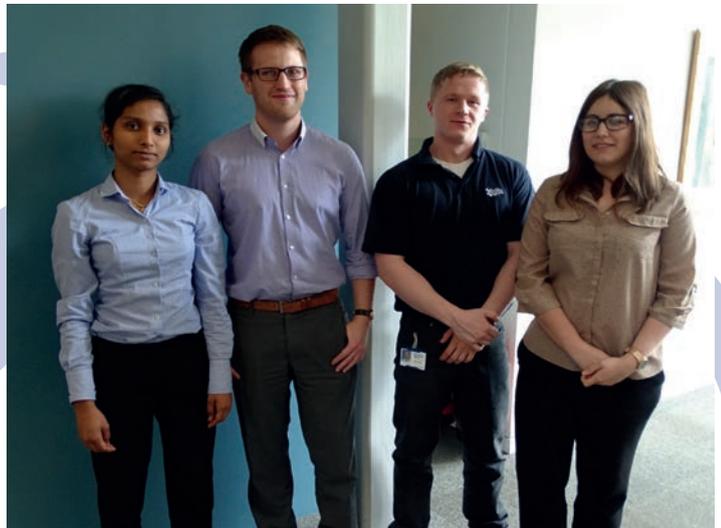
The conversion exercise involved the re-drafting of some 2,000 mimics and the migration of almost 100,000 tags. Mimic conversion took advantage of standard smart faceplates that were already in place within Wessex Water but were further developed and extended to increase the efficiency of the conversion. Microsoft Access utilities were developed in-house to migrate the legacy databases including alarms, to the structure required for WinCC. Visual Basic (VB) modules were developed to assist with object substitution and bespoke scripting developed for functions not natively provided by WinCC.

While it was important to take advantage of new functionality provided by WinCC, care was taken to maintain the familiar look, feel and navigation of the legacy system. Site staff in particular found this very helpful, and allowed them to more easily get to grips with the new product.

The installations took place with little or no interruption to the operation of the

sites. The new SCADA servers had to interface with ageing legacy PLCs using third party OPC software. As part of site testing, both old and new SCADA systems were run in parallel to make sure that all existing functionality, alarms and archiving had been captured. The old systems were removed when a good level of confidence had been achieved.

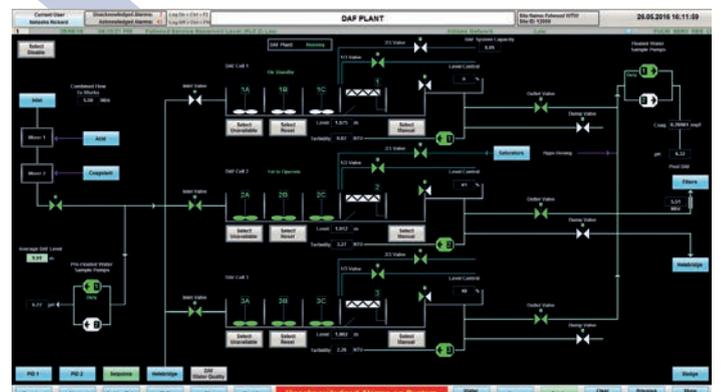
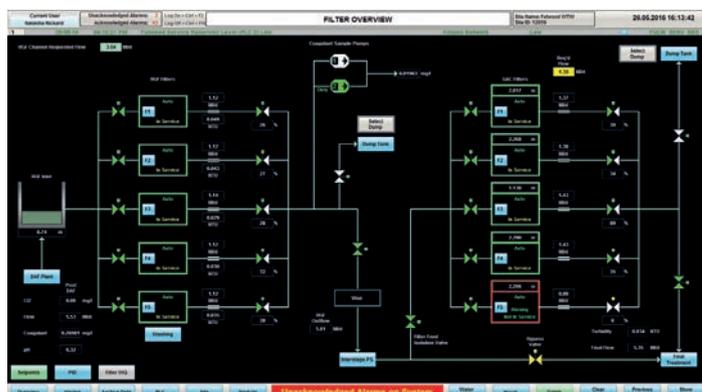
A number of strategic goals were also achieved, including the use of centrally managed authentication to the SCADA systems, making it easy to add, remove or change staff access. The new authentication system is also very popular with engineering, operational and scientific staff, often removing the need to visit site by providing remote access to the same functionality and high resolution data archiving. Dave Mining explains: *“All activities are now logged using the individual’s credentials, whether they are carried out locally or remotely. Hence it is possible to determine who did what, when it happened and the position before the action was carried out. Wessex Water is now able to roll out similar access across its Siemens HMIs.”*



Wessex Water’s engineering and construction in-house automation team

John Thompson, Director of Engineering and Construction, Wessex Water concludes: *“The SCADA replacement project was challenging, requiring the use of modern hardware and software technologies in a diverse geographical environment, connected on site to ageing legacy PLCs and offsite with low bandwidth communication links. However with our in-house expertise and the assistance of Siemens, the team has delivered this complex project on time and within budget. We now have a modern supportable common SCADA platform across our major waste and supply sites which will underpin our operational and performance objectives for years to come.”*

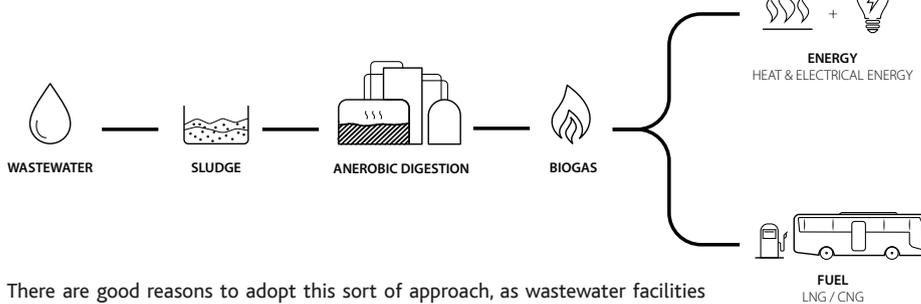
[www.wessexwater.co.uk](http://www.wessexwater.co.uk)



# The first energy-neutral catchment area

By minimising energy consumption throughout the whole water cycle (water and wastewater handling) and also maximising energy production from the wastewater facility it has been possible to create an energy-neutral catchment area for 200,000 people in Denmark's second largest municipality, Aarhus. This has been achieved without adding external carbon to the wastewater facility or using any external energy sources.

In recent years a few wastewater treatment facilities have started to achieve energy neutrality. The most common approach is to digest the sludge and use the gas from the digester to generate electricity and heat. The electricity and heat are typically used to meet the needs of the wastewater facility itself and the surplus, if any, is sent into the electricity grid or district heating system. If this is not possible, the gas can be cleaned and exported to the natural gas network or used as fuel for buses and other road vehicles.



There are good reasons to adopt this sort of approach, as wastewater facilities are highly energy intensive as is the whole water industry. According to the Environmental Protection Agency (EPA), between 3 and 4 % of the total electricity consumed in the USA is used by water and wastewater handling facilities. The UN claims that the corresponding figure worldwide is nearer 8 % and the EPA also states that around 35 % of the electricity bills of local government relate to water and wastewater operations.

Aarhus Water Ltd is a water service company in Denmark's second largest city – Aarhus – with operations that cover both water and wastewater handling. Five years ago, it started a process aimed at optimising the energy efficiency of its treatment facilities, with a special focus on the Marselisborg catchment area. This is a relatively flat geographic region in the centre of Aarhus, which has around 200,000 inhabitants. It is a traditional city area where water is obtained from a groundwater source and is, on average, pumped from a depth of 35 m.

On the water supply side, energy savings have been obtained by reducing leakage to between 6 and 8%, from more than 14%, and by splitting the city into pressure zones. It is anticipated that additional energy savings will be possible by optimising the pumping for groundwater, and by even more effective pressure zone management.

The Marselisborg wastewater facility, which deals with household wastewater from the city, is a conventional activated sludge treatment plant with mesophilic digestion. No FOG (fats, oil and grease) or external carbon is added to the process, and no solar or wind energy sources are used. The typical outlet value for biochemical oxygen demand (BOD5 modified) is around 2.4, for total nitrogen (TN) around 7.1 mg/l and for total phosphorus (TP) around 0.53 mg/l.

The wastewater facility has been upgraded with more energy efficient equipment and, equally important, a comprehensive computer control system, which makes extensive use of on-line sensors. Key elements of the upgrade include:

- Securing energy-efficient bottom aeration by, among other things, ensuring regular maintenance of the aeration system
- Installing high speed turbo blowers
- Installing a high-efficiency CHP (combined heat and power) plant
- Fitting Danfoss AC variable speed drives (VSDs) on all rotating equipment in the catchment area – a total of 290 VSDs.

Fitting the VSDs was an important measure as wastewater treatment processes are characterised by large load variations over the 24-hour daily cycle and also seasonally throughout the year. Using VSDs to control blowers, pumps and

other motorised equipment enables their operation to be accurately matched to these load variations, ensuring that their energy efficiency is optimised under all conditions.

In addition, the key for real-time control of the biological stages is to use the VSDs to control the operation of the blowers in accordance with a load estimate calculated from the on-line ammonium sensors and the incoming flow. This results in typical dissolved oxygen (DO) values between 0.3 and 0.5, and simultaneous nitrification and de-nitrification. Automatic control of sludge age, based on VSD control of the return activated sludge (RAS) pumps, as well as effective carbon harvesting in the primary sedimentation tanks, ensure that the maximum amount of carbon is secured for digesting and energy production.

In 2014, these measures resulted in the production of 130% electricity – that is, 30% more than used for operating the process – and 2.1 GWh of heat, which is used in the local district heating network. Overall, this equates to a total energy production of 192% – 92% more than the energy used by the wastewater facility. This energy covers 94% of all energy used for water supply production, water distribution, wastewater pumping and wastewater treatment in the 200,000 inhabitant catchment area.

Toward the end of 2015, the Anammox (anaerobic ammonium oxidation) process was implemented for treating the reject water and an additional highly efficient CHP generator was installed. These steps are expected to increase energy production to the level where it will be sufficient to cater for entire energy needs for the complete water cycle in the Marselisborg catchment area. In the first eleven months of 2016, the wastewater treatment plant produced around 234 %, equal to 134 % more energy than needed for its own operation, which means that the catchment (water production and distribution, wastewater pumping and treatment) area was now energy neutral, in fact with an energy surplus of 7%. More details are provided in Figure 2.

Marselisborg catchment area	Status 2014	Goal 2016
<b>Energy consumption</b>		
Water treatment, distribution [kWh] (avg. 0.51 kW/m <sup>3</sup> , high)	3,1 mill	3,2 mill
Wastewater transport [kWh]	0,7 mill	0,8 mill
Marselisborg WWTP [kWh] (BOD <sub>5</sub> = 2,4/TN= 7,1/TP = 0.53)	3,4 mill	3,2 mill
<b>Total energy consumption [kWh]</b>	<b>7,2 mill</b>	<b>7,2 mill</b>
<b>Energy production</b>		
Electricity production [kWh]	4,4 mill	4,8 mill
Heat production [kWh]	2,1 mill	2,6 mill
<b>Total energy production [kWh]</b>	<b>6,5 mill</b>	<b>7,4 mill</b>
<b>Own energy supply degree</b>		
Wastewater treatment [%]	192	234
Wastewater transport and treatment [%]	162	185
<b>Total Marselisborg catchment area [%]</b>	<b>94%</b>	<b>103%</b>

Figure 2

Aarhus water is now in the process of upgrading the next catchment area, Egaa. This is a smaller area with 120,000 inhabitants. Performance similar to that achieved in Marselisborg is expected, even though the Egaa facility is only half the size of the Aarhus one.

In conclusion, it has been proven, that based only on traditional processes and household wastewater, it is possible to make the whole water cycle in a catchment area completely energy neutral, without adding external carbon or using wind or solar energy. A further bonus is that the return on investment period has been found to be less than five years and so Aarhus has been able to reduce water prices rather than, as is generally seen, increasing water prices for end customers.

[drives.danfoss.co.uk/home](http://drives.danfoss.co.uk/home)



**NEW**  
**CONCERTOR™**  
PUMPING SYSTEM WITH  
**INTEGRATED**  
**INTELLIGENCE**

**WORLD'S FIRST WASTEWATER PUMPING SYSTEM WITH INTEGRATED INTELLIGENCE**

This revolutionary system delivers optimal performance while reducing your total cost of ownership. It also offers unparalleled flexibility and simplicity on a whole new level. You might even say it thinks for itself. We invite you to enter a new era in wastewater pumping with Flygt Concertor.

**One powerful solution. Unlimited possibilities.**

# PROVEN SAVINGS FROM FLYGT CONCERTOR®

The world's first wastewater pumping system with integrated intelligence solves chronic clogging problems and halves energy usage at Heathrow Airport



London's Heathrow Airport is one of Europe's busiest airports catering for more than 200,000 passengers each day with an average of 1,200 flights arriving and departing from the airport daily. Heathrow Airport Water Services Department has an extensive network of 120 pumping stations to manage and has been a Xylem customer for 25 years.

Heathrow Airport Water Services Department agreed to install and trial Xylem's new state-of-the-art Flygt wastewater pumping system in an effort to solve chronic clogging issues at one of the airport's wastewater pumping stations.

As well as delivering consistently clog-free pumping, Flygt Concertor dramatically reduced energy consumption by 53% at the pumping station.

## The Challenge

The Central Area Sanitation Unit adjacent to Terminal 1 is a receiving station for aircraft toilet waste which contains a high level of non-biological solids including various plastic material, wipes, nappies and clothing. This stringy material can be difficult to pump since it can easily get caught on the impeller and partially block the pump - leading to increased energy consumption and in the worst case, a full blockage of the pump.

This challenging wastewater application led to regular clogging and the sump requiring significant operational activity to try to keep it clean.

"We would usually have to deal with two or three clogging issues during a three month period," said Ian Jolly, Systems Specialist for Water, Heathrow Airport Water Services Department. "We also used to see a shelf of fat and material deposits build up on the walls of the sump as well as floating debris. This presented a very tough challenge to our existing wastewater pumps which we frequently had to de-clog."

## New integrated clog-free technology

Heathrow Airport required a solution that would solve the operational costs and environmental problems caused by:

- High levels of floating debris on the surface of the wet well
- Higher than normal percentages of rag/non-biological solids in the wastewater.

As a loyal customer, the Heathrow team trusted Xylem's expertise in solving these particularly challenging problems and agreed to trial Flygt Concertor, a new wastewater pumping system with integrated intelligence: "We have used a number of Flygt technologies over the years and have found the Flygt team to be very willing to listen to our needs, always eager to find a solution to our particular challenge," said Ian.

As a world's first, Flygt's new wastewater pumping system combines built-in sump and pipe cleaning functionalities in a single integrated solution; capable of tackling sump floating debris as well as pipe sedimentation. Furthermore, the pump cleaning function together with Adaptive N-hydraulics effectively detects and solves clogging from large debris.

It is precisely the integration of "intelligent" functionalities and state-of-the-art technology that makes Flygt Concertor a unique wastewater pumping system; providing unparalleled results and long term positive benefits for many applications.

Since its installation at the Heathrow Central Area Sanitation Unit in November 2015, Concertor has provided absolute clog-free operation, as well as a remarkable improvement in the wet well environment. "Since installing Concertor we have had absolutely no clogging and the sump remains clean with no fat build-up," said Ian. "As well as peace of mind - which really is priceless - the cost savings are significant at approximately 87.5% of the annual costs in cleaning and servicing."

## Energy reduced by over 50%

Clog-free operations and a clean wastewater pumping station are however, not the only ways that Flygt Concertor improves wastewater operations. The system aims to deliver proven reliability at the lowest total cost of ownership and to achieve this it also, among other benefits, drastically reduces energy consumption.

In the case of the once-troublesome Central Area Sanitation Unit pumping station, energy savings are up to 53%, which again, is a result of both sophisticated software and cutting-edge components.

The Energy Minimizer function, together with the patented Adaptive-N hydraulics and the IE4 efficiency motor, automatically ensure that all the pumps run at their most efficient duty point. Additionally, since there is no need for ventilation, cooling or heating of cabinets, customers benefit from substantial energy savings over the system's total lifecycle.

## Compact design and more functionality

Flygt Concertor is proof that new and sophisticated technologies for wastewater pumping do not require more components or complexities. On the contrary, this groundbreaking new system is user friendly, simple to install, commission and operate.

"Concertor's compact design allowed it to fit into the existing position within the pump station, without any extra investment required to enlarge the cabinet. From an aesthetic and practical consideration the reduced panel requirement size will be of great benefit," said Ian. "It was simple to install and very user friendly. Actually, the trial pump was installed by one of the airport's water services mechanical technicians, who was not experienced in the commissioning of wastewater pumping systems and quickly gained confidence in the ease of installation and operation," he concluded.



For more information about Flygt Concertor visit [www.flygt.com](http://www.flygt.com)



# Pumps: Upstream Investment = Downstream Saving

*Jacopa MD Alex Lloyd argues that a defensible Totex strategy must include protecting pumps ahead of and throughout the treatment train*

*Bosker unit can deal with difficult material*

The change to Totex has caused a seismic shift in strategy for the water sector, one that has put the onus of responsibility on suppliers to demonstrate that their products and services deliver on outcomes for water companies.

The previous focus on Capex put the emphasis on short term cost reduction. With the move from 'outputs' to 'outcomes' capital expenditure and operational cost are now part of a greater whole. The healthy outcome of this is that the life cycle cost impact of procurement decisions are under scrutiny putting greater emphasis on innovation-driven cost-efficiencies.

Achieving this starts with effective inlet works solutions which can provide significant benefits that improve the efficiency and lifespan of pumping equipment at wastewater treatment works. There are a variety of upstream services where the Totex focus can be brought to bear to preserve downstream assets.

A comprehensive inlet works Totex strategy can then provide vital answers for protecting pumps ahead of and throughout the treatment train and our extensive range of inlet works solutions means we can offer a 'one stop shop' for our customers, including Coarse Screens, Fine Screens, Screenings Handling, Packaged Inlet Works, Packaged Grit Removal & Treatment Systems.

## Grit matters

It's hard to overstate the importance of grit removal at a wastewater treatment works. Effective grit removal at the preliminary treatment stage prevents the accumulation of grit in tanks and chambers, and helps to reduce wear on vulnerable equipment such as pumps by shielding them from abrasive detritus.

We've developed a comprehensive portfolio of products for grit removal, plus Classifier systems and Grit Pumps to tackle varying site configurations and requirements. For example, our rugged J+A Crossflow Detritor grit trap is designed to remove 95% of 0.2mm grit to produce a largely grit-free effluent that's cleaned, well-washed and drained.

When space is at a premium our J+A Jeta® grit trap provides a high level of



Jacopa MD Alex Lloyd

grit removal within a minimal footprint. Its simple, slow-rotating mechanism is highly efficient and uses minimal energy. And if you need to handle a mixture of solids from unscreened sewage sources to produce a cleaner grit than a standard classifier, our J+A Bache Classifier grit washer gets the job done. Made from either stainless or mild steel with few moving parts, it is easy to maintain for maximum design life and durability.

## Screen it

Effective screening removes debris that can affect the efficiency of downstream equipment and processes and ensures downstream operational and maintenance costs are minimised. It's well recognised that debris, either from storms or dumped material, can cause damage and blockage to critical pumps, leading to long periods of down time for repairs. And, as pumps are often very significant in terms of capital and operational investment costs, protecting them is hugely important to utilities.

Jacopa has therefore developed a very wide range of screens and screenings handling equipment. For example on sewage inflow to the inlet works choosing the right screen for the job is vital, it's important to consider the blinding ratio and head loss during normal and peak flow operations. The screen must be capable of handling the flow that is pumped in order to achieve self-cleansing velocities in the rising main, which is sometimes greater than the design peak flow Jacopa allows varying blinding factors for their screen apertures, typically for gravity flow this is 50% but for pumped flows a 70% factor is applied. This is equivalent to almost doubling the head loss associated with the screen apertures. This is done because the consistency and size of the screenings change after pumping.

We have recently launched an innovative new straight through screen (STS), a classic escalator-type fine screen specifically to provide effective inlet works protection for assets further into the treatment train. With the increased emphasis on efficiency and customer service in mind, the screen is very competitively priced and has easily replaceable screen panels and low cost replacement parts.

The lightweight screen is a significant departure from previous models, with an impressive screenings capture ratio similar to that of band screens, and a much-reduced risk of screenings carry-over.

It is easy to retrofit the STS screens into existing inlet channels as well as new works, and even in tanks if flow can be pumped to them or fed by gravity. A mobile, tank-based solution for rental, which is seen as a potential opportunity where an urgent solution is required can be considered.

The screens were rigorously tested at the independently-run national test centre in Chester-le-Street, which highlighted a remarkable 81% capture ratio that



*Jacopa Straight Through Screen*

makes the STS screen comparable to the very best of its competitors.

These screens have a unique modular design, and are fabricated in 9mm thick moulded plastic set in stainless or carbon steel frames. The panels can be provided with perforations of 3, 5, 8 or 10mm, giving options from very fine to coarse screening and at the finer end helping with the perennial problem of excluding cotton bud sticks.

Feedback already suggests that the ease of cleaning has impressed potential customers. There is no cleaning brush to adjust or replace, as the system uses a washwater spray cleaning system that provides both energy and maintenance cost saving benefits. To guarantee simple operations and reduced maintenance, the screens have also been engineered to eliminate the use of chains. Another maintenance bonus is that only the screen curtain and its guide track are below coping level.

The modular construction chimes with our focus on modularity and standardisation, and significantly reduces downtime. Normally, if a screen is damaged the whole panel length has to be replaced, but with the STS screen a single panel can be quickly and easily slotted in, giving savings on components, labour and downtime.



*Jacopa 'Jeta' grit removal system with classifier*

The new emphasis on 'outcomes' rather than 'outputs' is also fuelling interest in our Bosker trashrakes. These well-regarded trashrakes are increasingly becoming a product of choice to protect pump stations and all pumping installations, particularly those that have a strategic importance. The range of floating debris that enters treatment works intakes is extremely varied, so all treatment works routinely employ a range of coarse and finer screening to ensure that the key downstream pumps and processes are well protected.

The Bosker cuts costs by combining a trashrake, overhead conveyor and debris loading equipment into one system that provides an effective turnkey solution to dispose of debris. The overhead conveyor has a fully automated grab unit with robust grippers that descend to grasp heavy and awkward items such as plastics, grasses, glass bottles, timber, and concrete, as well as balls of condensed rags.

The solution is typically used to protect very large, system-critical pumps at water and wastewater treatment works, used for either abstracting raw water at water treatment works or raw wastewater from wastewater treatment works' deep intakes.

One high-profile example of its use is the Bosker overhead trash raking system at Thames's Deephams wastewater treatment works in Enfield. Here, two grab units on a duty/standby basis were installed on the works' high-level inlet. This Bosker is cleaning five 11m deep by 2m wide inlets, each of which has bar screens with 100mm bar spacings.

As well as the popular larger overhead Bosker, there is a mobile Bosker 'Bandit'. This low-profile unit is designed for smaller pumping stations and inlets, and is ideally suited to wider inlets as it is set on a deck-mounted travel carriage.

### Storm Support

It's also critically important to provide support to customers in assessing hydraulic conditions within storm systems and any impact on the design characteristics of associated pump installations to reduce the risk of overflow when flow control equipment is fitted to attenuate downstream flows.

We recently teamed with Biogest AG, adding the company's highly regarded and competitive stainless steel stormwater products to its portfolio of screens and flushing systems. The move is part of a drive to further develop our storm products division to offer a comprehensive service and product range.

Flow control is, of course, a key issue in relation to protecting vital pumps in wastewater treatment systems, and solutions such as Biogest's flow regulators are key. These are a range of innovative electrical, or hydraulic-mechanical regulators that help utilities to avoid hydraulic overloads at wastewater treatment plants.

Storing excess flows during heavy rainfall and regulating the onward flow for treatment is integral to the modern utility approach to storm flows, driven by increasingly stringent legislation. Biogest regulators ensure that the pass-forward flow remains constant irrespective of the operating head, which is a critical factor in ensuring treatment plants are able to continue effectively treating the wastewater that they receive.

A defensible Totex strategy must then include protecting pumps ahead of and throughout the treatment train. However, cutting operational expenditure (Opex) is also vital and here we have seen an intensified focus on maintenance

and a move away from previous capital-intensive solutions. The new imperative for utilities is to get more out of existing assets by keeping them operating at optimum performance levels. We must also look to deliver reductions in energy use and drive ever improving efficiencies.

The increased emphasis on extending asset life and maintaining performance in AMP 6 is also reflected in our business relationships. Here it's important to look beyond the equipment to assist customers and project management teams in both long-term decision-making and short-term judgements on individual assets.

[www.jacopa.com](http://www.jacopa.com)

Organised by the Pump Centre



## Conference Theme

# “TOTEX: Pumping System Efficiency, Reliability and Optimisation”

The Pump Centre Conference is the UK’s leading conference and exhibition for those involved with pumps and pumping. The event is bigger than ever before with more exhibitors, a full conference programme, breakout sessions and a new product zone.

This year’s technical theme is:

“TOTEX: Pumping System Efficiency, Reliability and Optimisation” many key presenters from across the pump industry have already been signed up.

Become one of over a 1000 visitors to the Pump Centre Conference 2017 who will be able to:

- Meet 100 of the UK’s major manufacturers and suppliers.
- Network with industry experts and key players from across the supply chain.
- See the latest products and technology.
- Improve their technical knowledge at the conference and engineering breakout sessions.
- Discover new solutions to their pumping issues.

# ce & Exhibition

Thursday, 11th May 2017 at The International Centre, Telford



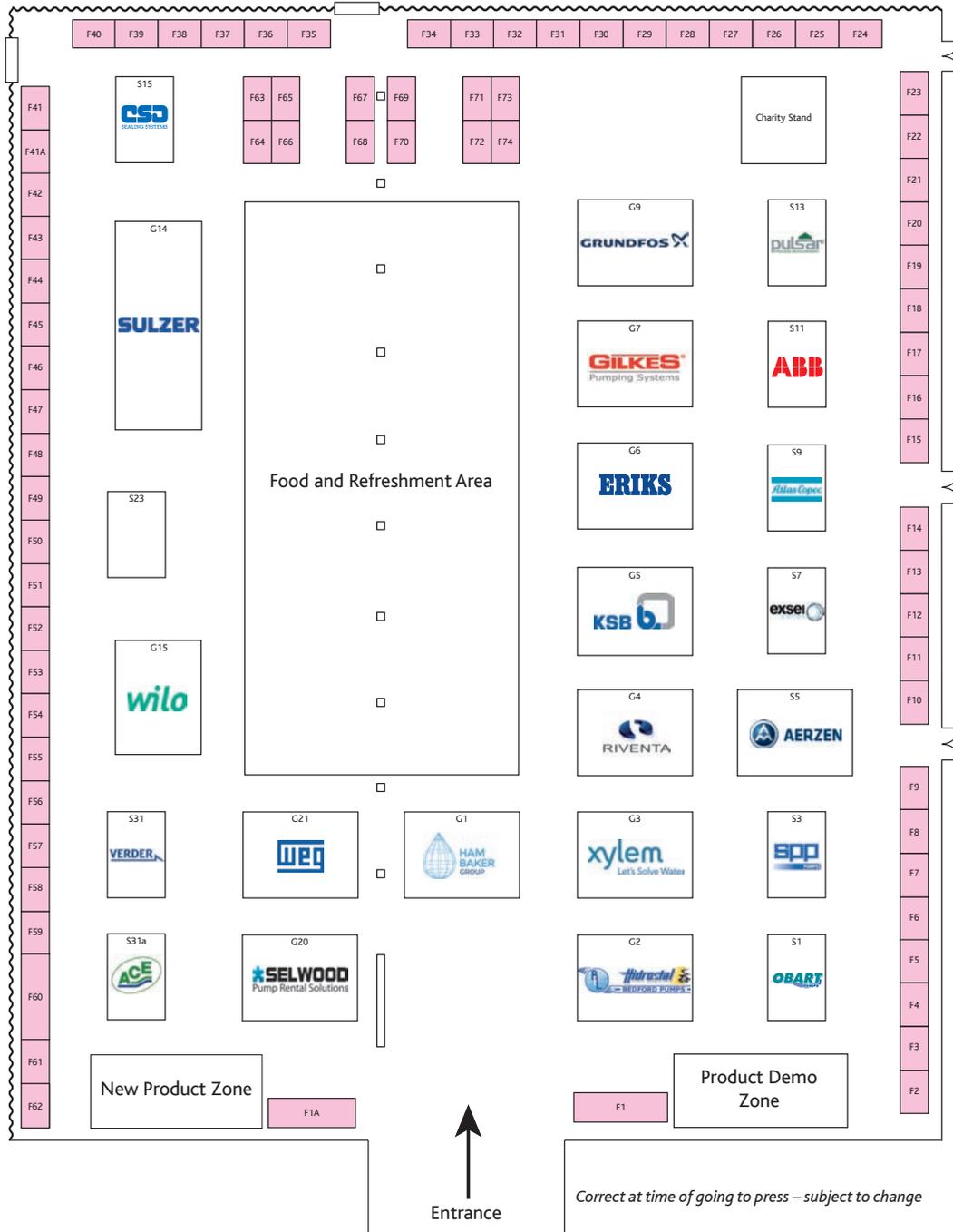
## REGISTER NOW!

The conference, exhibition and all the technical sessions are **FREE** to pre-registered delegates. Registered delegates also receive a **FREE** conference pack, proceedings and refreshments\*.  
(\*Subject to availability)

**TO REGISTER** Simply go to the Pump Centre website: [www.pumpcentre.com](http://www.pumpcentre.com), under EVENTS go to the Conference 2017 page and follow the link to register.

Or email: [karen.bridgeman@arcadis.com](mailto:karen.bridgeman@arcadis.com) and the link to the registration form will be emailed back to you.

# Exhibition floor plan



## Exhibitor list

HAM BAKER.....G1	JACOBA.....F1	TBC.....F27	HUBER TECHNOLOGY.....F53
BEDFORD/HIDROSTAL.....G2	IFM.....F1a	BHR GROUP.....F28	PRUFTECHNIK.....F54
XYLEM.....G3	GRAPHALLOY.....F2	CHEMRESIST.....F29	GEE & CO.....F55
RIVENTA.....G4	PROMINENT.....F3 & F4	RITTAL.....F30	SPX CLYDE UNION PUMPS.....F56
KSB.....G5	NETZSCH PUMPS.....F5	PUMP SUPPLIES.....F31	UNIPOWER.....F57
ERIKS.....G6	TECO.....F6 & F7	NOREVA.....F32	VOGELANG.....F58
GILKES.....G7	CENTA.....F8	SKF.....F33 & F34	BORGER.....F59
GRUNDFOS.....G9	BOULTING GROUP.....F9	DANFOSS.....F35	HYDROMARQUE.....F60
SULZER.....G14	MITSUBISHI.....F10	OERLIKON METCO COATINGS.....F36	KERRCO AUTOMATION.....F61
WILO.....G15	CEMA.....F11	TRIHEDRAL.....F37	M & N.....F62
SELWOOD ENGINEERING.....G20	ROCKWELL.....F12	ECS ENGINEERING.....F38	RALSPEED.....F63
WEG.....G21	LUTZ-JESCO.....F13 & F14	ISP.....F39	INDUSTRY PRESS & OTHERS.....F64
OBART PUMPS.....S1	SERA PRODOS.....F15	SEPEX.....F40	INDUSTRY PRESS & OTHERS.....F65
SPP PUMPS.....S3	FAIRFORD.....F16	PUMP SUPPLY & REPAIR GROUP.....F41	INDUSTRY PRESS & OTHERS.....F66
AERZEN.....S5	BLACKBURN STARLING.....F17	W ROBINSON & SONS.....F41a	INDUSTRY PRESS & OTHERS.....F67
EXSEL PUMPS.....S7	SIEMENS.....F18 & F19	T ALLEN ENGINEERING.....F42	INDUSTRY PRESS & OTHERS.....F68
ATLAS COPCO.....S9	TALIS.....F20	BELCOM.....F43	INDUSTRY PRESS & OTHERS.....F69
ABB.....S11	TCS PANELS.....F21	NOV.....F44	INDUSTRY PRESS & OTHERS.....F70
PULSAR.....S13	FLOWCHECK.....F22	LUCY ELECTRIC.....F45	INDUSTRY PRESS & OTHERS.....F71
CSD SEALING.....S15	EMS.....F23	SMITH & LOVELESS.....F46 & F47	INDUSTRY PRESS & OTHERS.....F72
TBC.....S23	SAMATRIX.....F24	CLEARWATER CONTROLS.....F48 & F49	BRINDLEY CHAINS.....F73
VERDER.....S31	EATON.....F25	NORD DRIVES SYSTEMS.....F50	INDUSTRY PRESS & OTHERS.....F74
AQUATIC CONTROL ENGINEERING...S31a	WATER PROCESS SOLUTIONS.....F26	ETATRON.....F51/52	

# What people say about the Conference

*"We have been exhibiting at the Pump Centre exhibition for the past 6 years and have watched the event grow to become one of the largest UK Water and Waste Water exhibitions. This event attracts the right calibre of people and focuses on the right topics affecting the pumping industry. Because of the popularity of this exhibition we have decided to become a main sponsor".*

*"The Pump Centre event gave the opportunity for customers to see all of their suppliers in the large exhibition hall, and to see demonstrated the high level of collaboration in the supply chain who are working on behalf of the UK water industry".*

*"We were one of the original members of Pump Centre and we're very pleased to see that it's grown to be the UK's recognised number one".*

*"The Pump Centre Conference is the one time of the year when the whole water industry comes together. You can be guaranteed to see everybody you want to see in one place, on one day, and I think that's what makes it really strong".*

*"The conference today has been brilliant. We've met quite a few of the water company representatives – some that we haven't had any contact with before".*

*"It's the only conference that we do attend because the people coming to the conference are engineers and the services we provide are directed back to the engineers".*



More details available at [www.pumpcentre.com](http://www.pumpcentre.com)



# A TOTEX experience

There's never been a better time to attend one of the UK's leading and largest conference and exhibition for the pumping industry at Telford's International Centre on 11th May.

Organised by The Pump Centre and featuring 100 key manufacturers and firms across the entire supply chain, the event is expected to attract more than 80% of the organisation's members.

Last year saw 1100 attendees through the door in a single day. Pump Centre Manager John Howarth is clear about its appeal – a unique combination of networking, business opportunity, knowledge sharing and skills development all under one roof and in the space of a single day.

*"It's a good opportunity for people to come along and meet a lot of good contacts, learn about the industry, get snippets of quality training, get fed, watered – and it's all free of charge,"* he says.

With a total of up to 25 technical sessions on hand - five in the main hall and as many as 20 breakouts – the event provides the sort of return on investment that cost-conscious employers demand today.

Everything, however, is provided access-all-areas and at no additional charge - and that includes even the parking and refreshments.

*"It's important when people attend that they can justify it to their companies. We've had plenty of good comments from the big utility companies that attend about the importance of training opportunities and that's what we provide,"* adds John.

But as well as addressing the practical day to day matters such as skills development and demonstrating new products, The Pump Centre prides itself on setting the agenda rather than simply following it.

That's reflected in the conference theme: TOTEX: Pumping System Efficiency, Reliability & Optimisation. It's a chance to address Ofwat's focus for the AMP6 period on total expenditure investment, making the best of the assets companies have rather than replacement.

That's a gamechanger that requires an agile approach from the industry built around sustainability and longterm solutions.

*"In years gone by, water companies always separated capital and operating expenditure, with different budgets. Now the total expenditure approach rather than focussing on capital is about making sure they get the maximum from the kit they've already got,"* outlines John.

*"It's about extending the life of equipment and getting things to last longer. Where capital expenditure was once the focus, now it's spread over the operating and maintenance side as well."*

With an impressive range of speakers and sessions, there will be ample time to deal with a wide range of issues affecting everyone across the sector.

Topics will be announced shortly but will combine a mix of end users, suppliers and manufacturers. In addition to the main session throughout the day there will be parallel breakout sessions to reflect all areas of concern. Four side rooms will accommodate these, with sessions in two rooms at a time running simultaneously.

With between 16-20 breakouts planned, the challenge won't be finding something to attend but seeing as much as possible within the day.

The technical sessions are expected to cover topics such as:

- New approaches to system/station design.
- Advances in system control and optimisation.
- Use of SMART technology to improve efficiency & reliability.
- Renewable energy generation.
- Better data collection and analysis.
- Application of Building Information Modelling (BIM) to pumping systems.
- Reducing costs using innovative products and / or solutions.
- Innovative ways of reducing planned and reactive maintenance.
- New standards/changes to existing that impact pumps/system design and/or operation.

*"Because you can choose your own agenda, the event is ideal for both those who are*



new to the industry and the more experienced members of the team," explains John. Themes will include sessions focussed on pumps, pumping systems, TOTEX, maintenance, mechanical & electrical equipment innovation and project case histories.

With an eye on newcomers to the water industry, the afternoon section looks set to focus on specific engineering projects to focus on specific engineering sessions.

When it comes to those recent recruits Howarth emphasises the need to address not only the younger entrants but also those with experience who are making a lateral move.

*"What we're finding is that the water industry has recruited a lot of people recently from outside the industry, who might benefit from specific industry training, support and knowledge."*

A glance at the exhibitor list reveals an abundance of respected names and tellingly, of the 100 or so stands, one in five is also a main sponsor for the event.

In terms of attendees to look out for, expect representatives from all the UK's water companies, their main consultants & contractors plus most of the pump manufacturers / suppliers in the water sector.

There will also be plenty of representation from those responsible for ancillary kit that is nevertheless vital in the context of pumping – such as valves, screens, drives, control panels etc.

Again the Totex theme will have an influence on what is exhibited, says John.

*"It will be highlighting issues around the maintainability of equipment, how good design at the capital stage can lead to much more. Do the design right and you can avoid certain maintenance issues."*

The Pump Centre Conference & Exhibition might be a must-attend for those who want to maintain their sector knowledge and effectiveness but it famously combines the serious business with hospitality.

On Wednesday 10th May, the night before the event, the organisation plays host to the conference dinner which boasts around 500 guests in total.

Highlight of the evening is the annual Young Engineer award, an opportunity to flag up new talent. It also demonstrates the continued relevance of the Pump Centre to an industry that is not only facing challenges but, through the organisation's role and activities, striving to find innovative approaches that allow it to develop.

*"The Pump Centre Conference & Exhibition is a great event. Delegates can get so much out of the day, under one roof they can see and learn about new products, they can find out about the industry, they can update their knowledge at the technical sessions and they can network in a relaxed environment with key contacts,"* says John.

*"We would love to see you there on the day, so why not go to our website and register?"*

**Registration now open!**  
Go to [www.pumpcentre.com](http://www.pumpcentre.com)



# Middlewich Heritage Trust exhibit at Pump Centre Conference



## The Legacy of George Murgatroyd's Brine Pump

Industrial Heritage and Archaeology are developing collective topics in many communities up and down the country. They are the legacies of our past, representations of the industries that once supported our families and created our communities.



Transfer Pumps Today

In an age of austerity it is sites like Murgatroyd's, all over the country that are paying the price. Slowly but surely communities are taking back control of their own industrial heritage, saving them for future generations to understand the impact that these machines and processes played in everyday lives. It is also important that connections with the modern industrial world are understood to measure just how far we have advanced in technology and explore what is to come.

George Murgatroyd had a dream of setting up his own Salt and Chemical business; 128 years later the brine shaft he had dug is nationally important... why? Because the rock salt he found started an industrial chain reaction of inventions, chemical advancement and technological achievement known throughout the world.

The Middlewich Heritage Trust has been formed to preserve and promote the heritage of Middlewich (including buildings, artefacts and archives) as a resource for the benefit of the residents of Cheshire and of the wider public.

Hear our story and discover how you could be part of it.

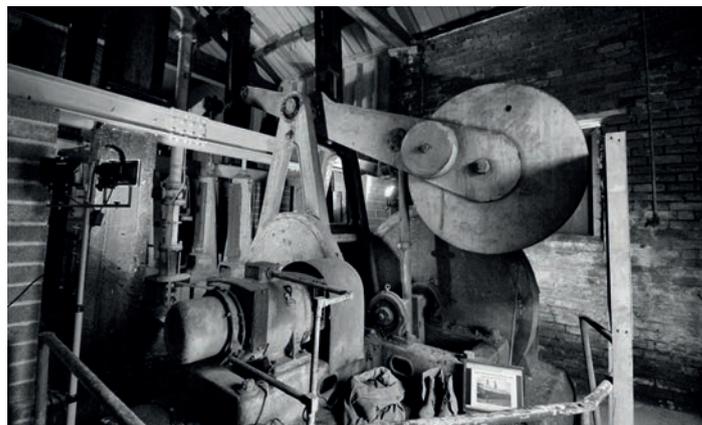
### What will be on the Stand?

- Area will consist of a panel showing the historical background to the Brine Pumps and Salt industry with a double-sided stand showing the repair and restoration project.
- A table will be set up with film footage, information/exhibitor packs and some of the items from the archive collection.
- The whole thing will be contained within a gazebo.
- Hoping also to have a double sided pop up banner on one side to entice people to take a closer look.
- Require two seats and power for either the TV flat screen or lap top

### What exactly do we need help with?

The following project works will be carried out:

- Finish refurbishment of timber gantry (the upper portion was refurbished as part of the roof repairs work already carried out)
- Installation of new windows and doors
- Replacement of derelict brine tank – (During the stabilization works, the brine storage tank on the pump-house roof was found to be beyond repair, and was removed. This tank formed part of the scheduled area and, as such, Historic England will expect it to be reinstated).



John Thom Pump Today

- Stabilisation of the brine shaft
- Restoration of pumps to operational condition
- Restoration of Motor Control Panel to operational condition
- Reinstatement of electricity supply
- Restoration of Transfer pumps to exhibition standard
- Provision of a suitable enclosure for Transfer pumps
- Site Interpretation
- Education package (to include all educational establishments)

It is also intended that the grounds surrounding the pump building will be developed and interpreted, in consultation with local schools and with the help of local Trust organisations and volunteers, as an educational resource covering geology, local history, environmental, science and technology.

[middlewichheritagetrust.blogspot.co.uk](http://middlewichheritagetrust.blogspot.co.uk)



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## Corrosion for Engineers

### A comprehensive guide

This 2 day introductory course is designed for engineers who want to understand all aspects of how and why corrosion happens and how to prevent it occurring in service in the water industry.

The course provides practical knowledge of how corrosion occurs. It explains in detail corrosion mechanisms, covering general corrosion and localised corrosion mechanisms such as those produced by galvanic corrosion, pitting, under deposit corrosion, graphitization, microbial attack etc.

It explores the specific corrosion mechanisms affecting corrosion resistant metals such as aluminium bronzes and stainless steels. The synergistic effects of corrosion occurring in conjunction with wear processes such as erosion and corrosion cracking mechanisms, including metal fatigue interactions, are also explained. Aspects of corrosion prevention will be explored including the use of protective and sacrificial coatings, design with corrosion in mind and the use of anodic and cathodic protection.

Delegates will also gain a working knowledge of the techniques used to discover and identify the types of corrosion that occur on plant, how to investigate service failures and use the knowledge gained to prevent future failures.

## Metals for Engineers

### What Every Engineer Should Know

This 2 day course is a comprehensive guide to metals for engineers which demystifies the subject and provides an understanding of how metallurgy directly relates to the mechanical properties of components used in water industry assets. No prior knowledge of metals is required.

All engineers require a sound basic knowledge of metals to be able select and buy the right components, undertake problem solving and failure analysis, perform appropriate maintenance, increase reliability, make engineering changes and understand how long a component will last.

The course starts with the steels story - right from 'what is a metal?' It builds step-by-step from carbon steels, through alloy steels to stainless steels and non-ferrous alloys such as aluminium and copper. Delegates will learn about how metals are strengthened and heat treated to produce a large range of components with vastly differing mechanical properties and understand how they are joined together by bolting, welding and brazing. The course also covers aspects how metals degrade in service over time and advice on selecting the right metals for service duty.

Everyday engineers go to work to look after engineering components made from metal but often know little about them. This course provides that essential working knowledge and is suitable for engineers at any stage of their career.

## Pumps and Pumping Systems – Non-Engineers

### This is a one-day Course for Non-Engineers

This training course is intended for those who are not Engineers or technically minded but need to know more about pumps due to the nature of their work.

Those working in the Finance department of a company dealing with pumps or pump spare parts, for example, who are responsible for carrying out a stock take of pump parts but are not familiar with pumps may benefit from the course. Others dealing with Engineers or Technicians who work on pumps and need to understand the terms used when scheduling their work, dealing with enquiries or ordering spare parts may also benefit from this course.

No technical knowledge or prior experience with pumps is required as the course is designed for non-technical people. Layman's language will be used at the outset to build and develop an understanding of pumps and pump components.

The day will cover the basics and provide an overview of the important properties of liquids, pressure and head, positive displacement and centrifugal pumps, pump components, pump and system curves and basic fault finding.

This course will provide those whose work brings them into contact with pumps or those who work with them, with the knowledge they need to better deal with the demands of their role.



## Effective Presentation Skills

### How to prepare and present effective presentations

Being able to give effective presentations confidently is important for all professionals whether it is to a peer group, to a wider audience or to the board. Very often good business cases are not approved due to poor presentations or lack of confidence on the part of the presenter. Equally those who are expert in their field sometimes do not achieve the recognition they deserve because they lack presentation skills.

This course will outline the methodology required to compile an effective presentation including audience profile and expectations, venue characteristics, information gathering, research and preparation, presentation drafting and timing. Guidance will also be provided on how to deal with confidence issues and audience interaction. Interactive sessions will be included to allow each delegate to put the key elements taken from the course into practice.

The course will benefit all those who are required to give presentations and those who wish to develop the ability to do so.

# Pump Centre Training for 2017!

The Pump Centre has a well-established and extensive programme of scheduled and in-house training courses covering a wide variety of topics, mainly relating to pumps & pumping. Demand for the courses has been high in order to satisfy companies' requirement to have trained staff that can deal with pumps and pumping systems related issues. The courses introduced last year include:

- Pumps & Pumping Systems – Introduction, Intermediate and Advanced
- Pumps & Pumping System – Non-Engineers
- Sewage Pumping Station Design
- Introduction to the Sewage Treatment Process
- Introduction to the Water Treatment Process

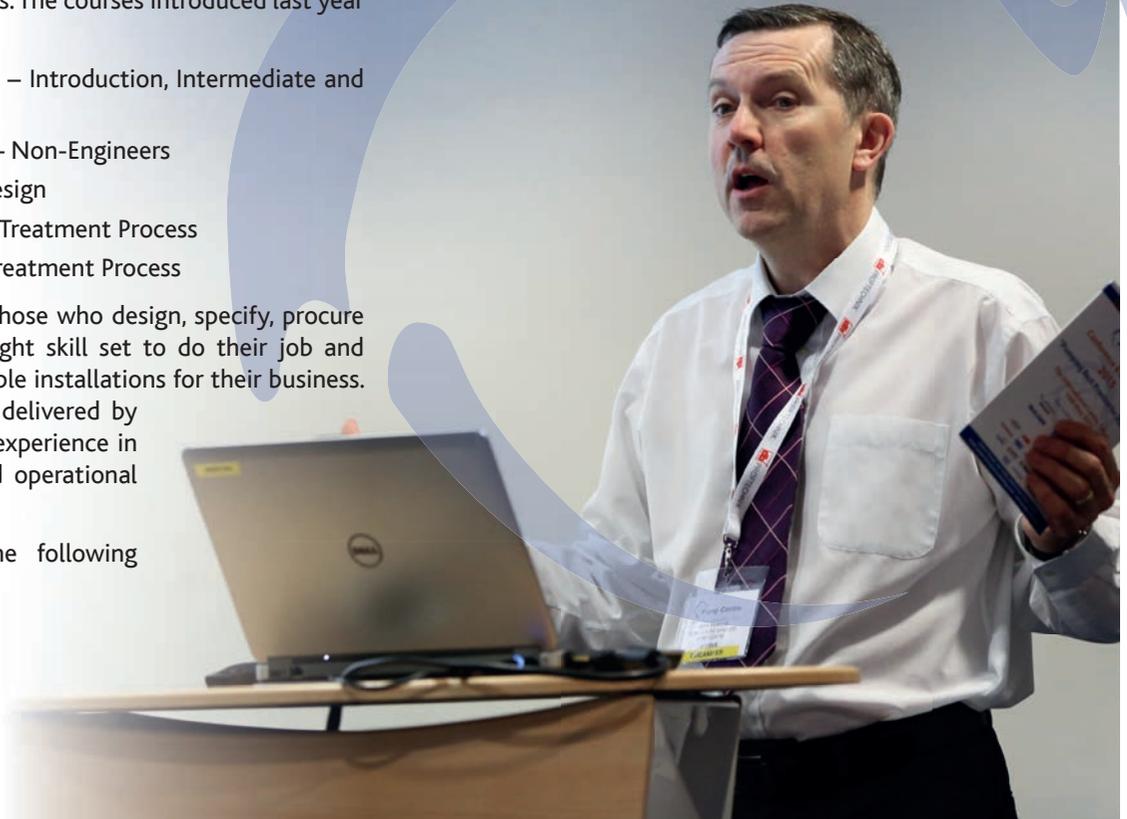
Such needs include ensuring those who design, specify, procure pumping systems have the right skill set to do their job and deliver cost effective and reliable installations for their business. All Pump Centre courses are delivered by lecturers with many years of experience in their field in both design and operational roles.

In 2017 we are adding the following technical based courses:

- Metals for Engineers
- Corrosion for Engineers

The programme for 2017 is shown below.

For more details of these and all other Pump Centre training courses please refer to the Pump Centre website [www.pumpcentre.com](http://www.pumpcentre.com) or contact Jim Eaves: 07968 707753 or email [jim.eaves@arcadis.com](mailto:jim.eaves@arcadis.com)



## Training & Awareness Day Programme 2017

Title	Date	Full Price	Members Price
Introduction to Water and Treatment Process (Reading)	07 Mar	£350 + VAT	£245 + VAT
Introduction to Sewage Treatment Process (Reading)	08 Mar	£350 + VAT	£245 + VAT
Efficient Pump Motors & Controls (Reading)	13 Mar	£350 + VAT	£245 + VAT
Pumps & Pumping Systems – Introduction, Intermediates & Advanced (Reading)	14 – 16 Mar	£795 + VAT	£556 + VAT
Pumps & Pumping Systems – Introduction (Reading)	14 Mar	£350 + VAT	£245 + VAT
Pumps & Pumping Systems – Intermediates (Reading)	15 Mar	£350 + VAT	£245 + VAT
Pumps & Pumping Systems – Advanced (Reading)	16 Mar	£350 + VAT	£245 + VAT
Improving Pump Maintenance (Warrington)	21 Mar	£350 + VAT	£245 + VAT
Why Mechanical Seals Fail (Warrington)	22 Mar	£350 + VAT	£245 + VAT
Maintenance of Rolling Element Bearings (Warrington)	23 Mar	£350 + VAT	£245 + VAT
Pumps & Pumping Systems for Non-Engineers (Reading)	29 Mar	£350 + VAT	£245 + VAT

Title	Date	Full Price	Members Price
Understanding Pumps & Pumping (2 Days) (Warrington)	4 – 5 April	£595 + VAT	£416 + VAT
<b>Pump Centre Conference</b> (International Centre, Telford)	11 May	FREE	FREE
Sewage Pumping Station Design (Reading)	17 May	£350 + VAT	£245 + VAT
Metals for Engineers (Warrington)	13 – 14 Jun	£595 + VAT	£416 + VAT
Pumps & Pumping Systems – Introduction, Intermediates & Advanced (Reading)	20 – 22 Jun	£795 + VAT	£556 + VAT
Pumps & Pumping Systems – Introduction (Reading)	20 Jun	£350 + VAT	£245 + VAT
Pumps & Pumping Systems – Intermediates (Reading)	21 Jun	£350 + VAT	£245 + VAT
Pumps & Pumping Systems – Advanced (Reading)	22 Jun	£350 + VAT	£245 + VAT
Corrosion for Engineers (Warrington)	27 – 28 Jun	£595 + VAT	£416 + VAT
Pumps & Pumping Systems for Non-Engineers (Reading)	5 Jul	£350 + VAT	£245 + VAT
Effective Presentation Skills (Reading)	12 Jul	£350 + VAT	£245 + VAT
Pumping for the Water Industry (Reading)	11 – 15 Sept	£995 + VAT	£696 + VAT
Corrosion for Engineers (Reading)	19 – 20 Sept	£595 + VAT	£416 + VAT
Introduction to Water and Treatment Process (Warrington)	19 Sept	£350 + VAT	£245 + VAT
Introduction to Sewage Treatment Process (Warrington)	20 Sept	£350 + VAT	£245 + VAT
Metals for Engineers (Reading)	26 – 27 Sept	£595 + VAT	£416 + VAT
<b>Scottish Mini-Conference</b> (Glasgow)	5 Oct	£120 + VAT	£96 + VAT
Pumps & Pumping Systems – Introduction, Intermediates & Advanced (Reading)	10 – 12 Oct	£795 + VAT	£556 + VAT
Pumps & Pumping Systems – Introduction (Reading)	10 Oct	£350 + VAT	£245 + VAT
Pumps & Pumping Systems – Intermediates (Reading)	11 Oct	£350 + VAT	£245 + VAT
Pumps & Pumping Systems – Advanced (Reading)	12 Oct	£350 + VAT	£245 + VAT
<b>Stainless Steels Water Workshop</b> (Warrington)	1 Nov	£120 + VAT	£96 + VAT
Efficient Pump Motors & Controls (Warrington)	7 Nov	£350 + VAT	£245 + VAT
Sewage Pumping Station Design (Reading)	14 Nov	£350 + VAT	£245 + VAT
Effective Presentation Skills (Reading)	16 Nov	£350 + VAT	£245 + VAT
Pumps & Pumping Systems for Non-Engineers (Reading)	22 Nov	£350 + VAT	£245 + VAT

(Conferences & Awareness Days are highlighted in red).

### Pump Centre members receive 30% discount off training courses and 20% discount off awareness days

All courses (unless indicated) will be held at:

- Reading courses will be held at:  
Best Western Calcot Hotel, Reading RG31 7QN
- Warrington courses will be held at:  
The Lymm Hotel, Warrington, Cheshire WA13 9AQ

The majority of our training courses can be run “In-House” at a venue selected by the Client. In-house courses become cost effective when clients have 8 or more members of staff to be trained. Please contact the Pump Centre for a quote.

#### To discuss your training requirements contact:

Jim Eaves: 07968 707753 or email [jim.eaves@arcadis.com](mailto:jim.eaves@arcadis.com)

#### To reserve your places contact:

Karen Bridgeman: 01925 843512 or email [karen.bridgeman@arcadis.com](mailto:karen.bridgeman@arcadis.com)

For more training information visit [www.pumpcentre.com](http://www.pumpcentre.com)

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