



## Recent Advances in Energy Savings in the Water Industry

21<sup>st</sup> February 2012

The Village Hotel Leeds South



Water utilities worldwide have risen to the challenge over the last decade of reducing the amount of energy used to transport and treat water and wastewater. As well as the large cost savings that result from successful energy saving measures there are also secondary benefits in terms of GHG reductions and often the detailed process scrutiny necessary to deliver energy saving has led to a marked improvement in overall plant performance.

As a result it is quite common for facilities to have a comprehensive energy management program that covers every aspect of the facility's energy use. This has helped to deliver energy savings of 10% or more across the range of treatment options and it is clear that more is possible. Dissemination of the range of energy saving measures that have been employed across the industry is now underway and these include many examples of innovation and novel thinking.

Energy in all its form has been examined and exploited from the heat in sewage through to the hydraulic head in pumped water. The water and energy utilities have collaborated to manage demand peaks and deliver savings through better demand management, and where feasible renewable options such as wind, solar and hydro have been installed.

With this in mind, it is the aim of this one-day event to examine the options that have been implemented for energy reduction throughout the wastewater treatment process. It will examine each aspect of the process from raw wastewater through preliminary, primary and secondary treatment as well as opportunities available for energy recovery from sludge. Based around case studies from within the UK Water Industry, delegates will learn of the many opportunities that still exist for energy reduction.

It will consider some quite novel options to deliver smaller savings as well as recent advances in those processes such as pumping and aeration, where the bulk of energy is used. Delivered by active practitioners it will provide a valuable update to your own energy management plan and should repay your attendance with the savings you can make at your own treatment plant.

### Venue

#### The Village Hotel Leeds South

Capitol Boulevard West, Tingley, Leeds, LS27 0TS

The hotel is located just off junction 28 of the M62. Free parking is available on-site. Leeds train station is 6 miles from the hotel, and Leeds Bradford International Airport is 12 mile away. Full directions will be provided when you register; alternatively you can visit [www.village-hotels.co.uk](http://www.village-hotels.co.uk)

If you require accommodation for the 20th February we have negotiated a special rate of £85, to book please call **0844 980 0306** option 1 and quote Aqua Enviro.

### Sponsorship & Exhibition Opportunities

The cost for a 3m by 2m exhibition space at the event is only **£400 (+VAT)** – no hidden costs. This includes your stand space, 1 person to man the stand, a table and 2 chairs. **Exhibitors receive 20% off** the delegate rates.

To discuss sponsorship and exhibition opportunities at our events, please contact:  
**Sarah Hickinson** Tel: +44 (0) 1924 257 891  
Email: [sarahhickinson@aquaenviro.co.uk](mailto:sarahhickinson@aquaenviro.co.uk)



## Conference Programme

09.20 – 09.30

### Conference Opening & Welcome

09.30 – 09.45

### Chairman's Address – "Setting the Scene"

Alan Whipps, Pell Frischmann

09.45 – 10.10

### Reducing water supply energy costs through optimal operation

Matthew Main and Marcus Fowler, Tynemarch Systems Engineering

- Implementation of an optimisation software system, MISER, for minimisation of water supply operating costs and energy use through optimal operation of existing systems.
- Monthly production planning
- Pump scheduling.
- Closed-loop control – a pilot study in which pump schedules from MISER are uploaded to SCADA for automated control of pumps.

10.10 – 10.35

### Primary treatment – the forgotten hero of energy recovery

Ajay Nair, Stephen Palmer and Richard Ratcliff, MWH UK Ltd

- Alternatives to conventional primary settlement for improving performance;
- Impact on energy consumption, production and carbon production
- Consequential impacts on overall treatment works to prevent negative impacts downstream.

10.35 – 11.00

### Optimisation of wastewater aeration processes using real-time control - A recent history

Andy Thornton and Clive Murren, Hach Lange Ltd

- Real Time Control (RTC) System commissioned on the South Coast of the UK with power savings in the region of 20%; a reduction in operating costs of approximately £45,000/annum.
- Description of similar systems across the UK and Europe.
- Feed forward RTC of aeration control delivers OPEX savings in the region of 15-25% as well as considerable reduction in carbon emissions.

11.00 – 11.30

### Coffee Break

11.30 – 11.55

### Low dissolved oxygen operation of activated sludge plants: effects of greenhouse gas emissions

Amina Aboobakar<sup>1,2</sup>, Elise Cartmell<sup>1</sup>, Peter Vale<sup>2</sup>, Mark Jones<sup>2</sup>, Gabriela Dotro<sup>1,2</sup>, <sup>1</sup>School of Applied Sciences, Cranfield University, <sup>2</sup>Waste Water Research and Development, Severn Trent Water

- Investigations into GHG emissions indicate the potential for increased emissions nitrification at dissolved oxygen concentrations below 2 mg/L.
- Summary of current findings from a full-scale evaluation of a 35,000 pe nitrifying activated sludge plant at different dissolved oxygen set points.
- Results at full scale presented in terms of treatment efficiency, ammonia effluent concentrations, energy savings, and carbon footprint.

11.55 – 12.20

### Intelligent Pump Control providing Optimised Energy Costs and Pumped Volume

Keith Flint, Pulsar Process Measurement Ltd

- Pumped volume energy reduction
- Continuous pumped volume throughput allows early warning of burst mains
- Pump efficiency and time to spill warnings allow reductions in outflows and pollution incidents

12.20 – 12.45

### Reactive pump control for sludge pumps

Nick Brown, ABB Ltd

- Reactive Pump Control for Sludge Pumps is a patented control system for primary settlement tank sludge pumps.
- Case study at Severn Trent Water of how the system operates and the significant energy, maintenance and CO<sub>2</sub> reductions achieved.

12.45 – 13.15

### Discussion & Questions

13.15 – 14.15

### Lunch

14.15 – 14.40

### Improving energy production and utilisation efficiency for sludge dehydration

Nigel Martin and Son Le, United Utilities Group Plc

- Sludge drying or dehydration is the most energy intensive process in the water industry. Granulated or pelletized sludge is a more attractive product for agricultural recycling
- CHP is a common method of providing energy to site and to the digestion process especially, but provides inadequate energy for dehydration. So better efficiency and utilisation of other resources on site are needed to fulfil potential future energy requirements.
- The solutions include: better biogas generation, more efficient energy conversion devices, heat pumps, and integrated energy management.

14.40 – 15.05

### Update on operational experiences of gas to grid facilities in Stavanger, Norway

Oddvar Tornes, IVAR IKS

15.05 – 15.30

### Speaker TBC

15.30 – 16.00

### Coffee Break

16.00 – 16.25

### Sustainable solutions, the next challenge

Kieran Healey, Veolia Water Solutions & Technologies

- Producing energy requires fresh water, and energy is needed to produce, move and treat water. Understanding this water-energy nexus is fundamental to ensuring that we meet the challenge of sustainable growth.
- The environmental footprint, a decision metric based on economic footprint, carbon footprint and water impact provides a platform for measurement of environmental impact of technology selection, operational optimisation and economic viability.
- The new Water Impact Index expands on existing volume based measurement tools, incorporating multiple features such as volume, resource stress and water.

16.25 – 16.50

### Regulation and Environmental Targets: AMP 6 and Beyond

Douglas Crawford-Brown, Pell Frischmann

16.50 – 17.15

### Discussion & Questions

## Booking Form

### Delegate Details

I would like to register for the 'Recent Advances in Energy Savings in the Water Industry' event on 21st February 2012.

Title \_\_\_\_\_

Name \_\_\_\_\_

Organisation \_\_\_\_\_

Address for Correspondence \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Postcode \_\_\_\_\_

Tel \_\_\_\_\_

Fax \_\_\_\_\_

Email \_\_\_\_\_

### Fees

Full Delegate £290 (+VAT) = £348  
Students £100 (+VAT) = £120

### Method of Payment

CHEQUE: I enclose a cheque for

£ \_\_\_\_\_

Payable to AE Technology Transfer  
A VAT Receipt will be sent automatically

INVOICE: Please invoice for the sum of

£ \_\_\_\_\_

Purchase Order \_\_\_\_\_

Contact Name \_\_\_\_\_

Contact Number \_\_\_\_\_

Invoice Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### CREDIT/DEBIT CARD:

Card Number \_\_\_\_\_

Name on card \_\_\_\_\_

Expiry date \_\_\_\_\_

Security number (last 3 digits on reverse of card)

Registered address (if different to delegate address above)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



### Terms and Conditions

When you register for the conference you will automatically be added to Aqua Enviro events mailing list – you can unsubscribe from this at any point.

A charge of £40 (+VAT) will be levied for cancellations made up to 20 days prior to the event. Cancellations after this period will be liable for payment of the full fee. Payments should be received 30 days of receipt of invoice.

Signature \_\_\_\_\_

Date \_\_\_\_\_

**aqua enviro**  
technology transfer

### Enquiries and booking forms directed to:

AE Technology Transfer  
Unit 8  
Appleton Court,  
Calder Park  
Wakefield WF2 7AR

Tel: 01924 257 891  
Fax: 01924 257 455  
Email: clarehunter@aquaenviro.co.uk