Introduction

Since this series of conferences began, the demands upon the designers, consultants, contractors and users of pumping stations have both increased and widened. The safe and effective operation of a pumping station remains the primary requirement but demands for energy reduction are growing in importance with every year that passes. Not only are designers responsible for new stations, they are required to deliver the specified performance whilst minimising capital costs as reducing operating costs are now increasingly important.

In the UK strategies will continue to drive what is perceived to be the best compromise between the expectations of stakeholders, customers and government. Overarching these sometimes conflicting demands will be policies initiated in Europe on energy conservation and climate change. The recent floods in the UK, while exceptional, have highlighted the dependence upon pumping station performance. The growing problem of blockages caused by ragging, FOG (fats, oil and grease) and food products adds to the existing need for refurbishment of, or continued improvements to existing stations.

Further afield in the Middle East, pumping station design and operation is driven by yet another set of demands, where for instance the minimisation of H2S release, and the clearance of vast quantities of sand entering the sump, may require a different approach to familiar problems.

To meet this challenge, an integrated approach to pumping station design is required – the pooling of knowledge which contributors brought to the first conference proved an ideal forum for the sharing of latest ideas, products and techniques. This technical conference, which brings together not only specialists with a range of expertise but also the best methods and approaches to pumping station design and maintenance, is an ideal way to learn of the latest developments.

Who Should Attend

All those whose jobs involve them in:

- Government agencies
- Water, power and process companies
- Consultants
- Contractors
- Plant suppliers
- International development agencies
- Research and development agencies

Discussion groups

In response to requests from delegates of previous conferences, the committee has introduced two discussion forums where delegates can share experiences and knowledge. The first is CFD/Modelling where the advantages and problems associated with the technique will be discussed. The second has been titled Ragging but will encompass the many problems faced by the water industry in dealing with the varied products disposed of in our waste systems.

Language

The language of both the conference and the published Proceedings will be English.
Venue, Timing and Registration

The Conference will take place at Cranfield University in Bedfordshire, UK – the only wholly postgraduate institution in the UK. Cranfield is one of the top five research intensive UK universities, and it’s also the home of BHR Group Ltd. The Cranfield Management and Development Centre (CMDC) is the venue for the Conference.

Cranfield Management Development Centre
Cranfield
Bedford, UK
MK43 0HG

Email: cmdcsales@cranfield.ac.uk
T: +44 (0) 1234 752709
F: +44 (0) 1234 751707

The conference will run from 17–18 June 2008. It will open on the morning of Tuesday 17 June and will conclude the following day after the final session (approximately 6pm) on Wednesday 18 June.

On reaching the campus, you should follow the signs for Management Development Centre. On arrival at the Centre, follow the signs for registration. You may use car parks 2 & 3, number 3 is the closest to the registration reception. Registration will take place from 08.30 to 09.30 on Tuesday 17 June.

Travelling to Cranfield

Cranfield is conveniently located in a quiet rural setting just 5 miles from junctions 13 and 14 of the M1 motorways, 8 miles from Central Milton Keynes and 10 miles from Bedford (there are train stations in both towns). Cranfield is within easy driving distance of four international airports – London-Heathrow, London-Luton, Birmingham and East Midlands and there is even an airfield on site. Follow this link for detailed travel information http://www.cmdc.info/location.asp.

Conference Dinner

Admission to the gala dinner is included in the delegate fee and additional tickets are available to purchase from the conference organisers. Guests will dine at the Cranfield Management and Development Centre in a private dining room where a four-course dinner of British influence will be served.
Accommodation

Delegates are responsible for booking their own accommodation in Cranfield. However an allocation of rooms at the CMDC has been reserved at a special discounted rate. Please refer to the booking form in this leaflet for full details and prices.

Delegates are to make their reservations directly with the hotel before 30 May 2008. Any unconfirmed accommodation in our allocation will be released on 30 May for general sale – therefore we cannot guarantee availability or the discounted price after this date.

For alternative accommodation options please contact the Conference Organiser for a list of further options in the area.

Keynote Speakers

We have pleasure in announcing that George Butler, the Director of Asset Management at Northern Ireland Water will give a keynote address after lunch on day one and Dave Sheppard, Consultant Engineer at MHW will give the morning keynote address on day two of the conference. John Howarth, Pump Centre Manager, will introduce their new Design Guide. The topic of Ragging will be introduced by Andy Drinkwater of WRC who will give an overview on their present work on flushable products, FOG and food products.

Technical Advisory Committee

UK Committee

Mr Peter Clark
Mr Michael Crowley
Dr Yolande Herbath
Mr Ivor Rhodes (Chairman)
Mr Rick Scutter
Mr Mark Stone-Wigg
Black and Veatch Ltd
Fluid Mechanics Ltd
BHR Group Ltd
ACE Cranfield
Severn Trent Water
Mott Macdonald Ltd

Overseas Committee

Professor Eng Bruno Brunone
Dr Andreas Dudlik
Dr Didia Covas
Professor Helena Ramos
Università degli Studi di Perugia, Italy
Fraunhofer UMSICHT, Germany
IST – Technical University of Lisbon, Portugal
IST – Technical University of Lisbon, Portugal

Supporting Organisations

- IAHR
- Black & Veatch
- BPMA
- British Water
- The Pump Centre

Members of the above organisations are entitled to claim a 10% discount off the conference registration fee. Please indicate your membership details on the registration form to obtain the discount. We regret we cannot give multiple discounts.
Sponsoring Organisations
Mono NOV is generously sponsoring the conference gala dinner on Tuesday evening.

Other organisations wishing to participate in the sponsorship of the conference are asked to contact the conference organiser.

Acknowledgements
We would like to thank the Technical Advisory Committee, panel of referees, supporting organisations and sponsors for their help and support.

A Feature on BHR Group’s work for the Water Industry
WWM6 is the sixth consecutive phase of BHR Group’s industrial research consortium on Water and Wastewater Mixing. The WWM consortium provides a platform for water industry companies to invest in joint research, directly applicable to current water industry process issues. Companies obtain the full benefit of the research program for only a portion of its cost.

WWM has a core focus on process efficiency. Since its start in 1995, WWM research has provided reports and design guides to its members on efficient mixing in pipes, channels, chemical dosing systems, sludge tanks and a wealth of knowledge on sewage sludge rheology. Each of these helping to improve efficiency and reduce costs in water treatment processes.

In the current phase of the project WWM6, work is focused on:

- Building and upgrading the current WWM sludge rheology database (the largest database of its kind world-wide)
- Designing a calculation tool to predict systems losses in pumped sludge systems
- Investigating mixing in digesters and sludge tanks with complex rheological fluids
- Creating a methodology for energy saving in flash mixers and flocculators
- Investigating mixing of chemical dosing in sewage sludge

Membership of WWM is made up from water companies, consultants and their suppliers, and allows each company access to over 10 years of directly applicable water industry research knowledge.

Companies can join the WWM research consortia or find out more information by contacting Dr. Yolande Herbath, Commercial Manager, y.herbath@bhrgroup.com.

Enquiries
Enquiries should be addressed to:

The Conference Organiser
BHR Group Limited
The Fluid Engineering Centre
Cranfield, Bedfordshire
MK43 0AJ, UK
Tel: +44 (0)1234 750422
Fax: +44 (0)1234 750074
E-mail: conforg8@bhrgroup.co.uk
Web: www.bhrconferences.com
**Business case Drivers**

**Improved sewage water system saves environment and cost for The Hague, The Netherlands**
*R Smith, AESSEAL plc, UK*

**Preliminary evaluation of framework for inferring hydraulic resistance of wastewater forcemains**
*M Leong, P Clark, Black & Veatch, UK*

**Pump-storage optimization with renewable energy production in water supply systems**
*S Rafique, BHR Group Limited, UK*

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**Pumps**

**Watewater industry pump reliability**
*R Smith, AESSEAL plc, UK*

**TBA**

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**Control Optimisation**

**Innovatory operational control systems for sewage pumping**
*A Laundon, L Bishton, Byzak Limited, UK; B Dixon, Northumbrian Water, UK*

**Multi-objective optimization of pumping system operation using heuristic techniques**
*C Sousa, D I C Covas, H M Ramos, DECivil-Instituto Superior Técnico, Portugal*

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**CFD**

**The application of CFD to the hydraulic design of pump sumps**
*M Leong, P Clark, Black & Veatch, UK*

**Application of CFD and physical modelling techniques in the hydraulic design of pump sumps (case study of the Brunei LNG cooling water circulation pumps)**
*S Rafique, BHR Group Limited, UK*
Integrated System Design

Design concepts for an attemperating pumping station
J McAndrew, Connell Wagner Consulting Engineers, Australia

Pump station and forcemain design optimisation in a fast-track design-build project
S Eftekhazadeh, M Riley, Earth Tech, Inc., USA; R Mori, Irvine Ranch Water District, USA

Upgrading foul and storm-water pumping stations and rising mains in extreme (Middle East) conditions
S Bottom, H Graham, Gutteridge Haskins and Davey Ltd, UK

Pumping from the Thames Water Ring Main
P Johnson, Mott MacDonald Ltd, UK

Monitoring

A new technique for condition monitoring of new and retrofit pumping installations
L Reynolds, A Bates, Artesis LLP, UK

Sustainable energy savings at a UK water pumping station
M Yates, Advanced Energy Monitoring Systems Ltd, UK; P Cline, Atkins Limited, UK

Assessment of potential savings in pump operations
A Black, H Innes, Mott MacDonald Ltd, UK

Refurbishment / Rejuvenating

Rejuvenating pumping stations at Rand Water
P L Reyneke, Rand Water, South Africa

Engineering challenges to replace steam pumping plant with electric driven plant at Rand Water’s Vereeniging pumping station site, South Africa
W F Schwellnus, Rand Water, South Africa

Conference Proceedings

The conference papers will be professionally published as a soft bound volume, and will include a CD. They will be on sale from BHR Group upon the close of the conference. The proceedings are included as part of the delegate fee. To purchase additional copies, please contact Mrs Marian Rolfe at the BHR Group address, or by email at mrolfe@bhrgroup.co.uk
Registration

The registration fee includes entrance to all technical sessions from 17–18 June, a bound book and CD of the conference proceedings, lunch and refreshments daily, and entrance to the conference dinner.

<table>
<thead>
<tr>
<th><strong>Early bird rate (before 16 May)</strong></th>
<th><strong>Full registration rate (after 16 May)</strong></th>
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<tbody>
<tr>
<td>Presenting author</td>
<td>Presenting author</td>
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<tr>
<td>£540 +VAT</td>
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<td>Delegate</td>
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<td>£720 +VAT</td>
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<td>Students</td>
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<td>£360 +VAT</td>
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</table>

**Early bird rate** – applicable to all bookings received with payment on or before 16 May 2008.

**Presenting authors** – each presenting author (maximum of 2) is entitled to a 25% discount off the conference fee.

**Rising Stars** – in keeping with its audience, BHR Group wishes to foster recent graduates (within the last 5 years), engineers and managers to encourage their development and interaction with experienced technical managers. For full paying delegates, the organisers offer the option of a second place at a discounted rate of 50% for a colleague who meets the above criteria.

**Students** – a limited number of places are available for bona fide students at 50% of the full conference fee. Please contact the conference organiser directly to register as a student.

Exhibition Service

A tabletop exhibition is planned alongside the conference and there are two options available. Organisations wishing to participate as an exhibitor are advised to contact the conference organiser.

**Option A is £450 + VAT and includes:**
- one exhibition space with one table (6x2.5ft) and two chairs (all additional equipment must be provided by the exhibitor)
- lunch and refreshments daily*
- 5 minute presentation slot during the conference*
- contact details of delegates attending the conference

**Option B is £900 + VAT and includes:**
- all the items in Option A
- attendance to all technical sessions*
- a copy of the proceedings and CD*
- attendance at the gala dinner*

* for one person only

Promotional Literature Service

There is an opportunity for companies to insert promotional literature in the delegate information packs at a cost of £300 +VAT. Material for insertion should be received by BHR Group Limited before 9 June 2008. A sample of literature must be sent when making your booking for this service.

Proceedings Publicity

Companies may purchase a full page of advertising in the book and CD version of the proceedings. The cost of each page is £300 +VAT. The book is a soft bound volume, produced in Royal Octavo size. As well as being distributed to all attendees of the conference, the proceedings and CD are sold worldwide after the event. Copy must reach the conference organiser by 18 April 2008 to meet the publishing deadline.
Methods of Payment

Full payment must accompany the registration form. Please submit one form for each delegate and quote WWPS08 and the delegate’s name and company on all correspondence. Photocopies of a blank form may be used.

- **Credit Card** – payment details should be entered on the registration form by completing the appropriate boxes and signing the form
- **Cheques** – make payable to BHR Group Limited
- **Sterling Bank Drafts** – delegates attending from countries with currency restrictions may wish to use sterling bank drafts
- **Bank Transfers** – payable to National Westminster Bank Plc, Cranfield University Branch, Wharley End, Cranfield, Bedford MK43 0SR, UK

**Sterling payments**
- Account No: 36565466
- Sort Code 60-06-56
- IBAN: GB40 NWBK 6006 5636 5654 66
- BIC: NWBK GB 2L

**Euro payments**
- Account No: 550/00/39509257
- Sort Code: 60-06-56
- IBAN: GB07 NWBK 6072 1139 5092 57
- BIC: NWBK GB 2L

**US Dollar payments**
- Account No: 140/00/39509273
- Sort Code: 60-06-56
- IBAN: GB43 NWBK 6073 0139 5092 73
- BIC: NWBK GB 2L

Cancellations

A full refund (minus a £50 admin fee) will be made for cancellations received on or before 16 May 2008. No refunds will be made for cancellations after 16 May 2008, however substitutions can be made at anytime.

BHR Group’s Expertise in Water and Wastewater

BHR Group is a leading centre of expertise in engineering with fluids, with long established interest in water and wastewater process plants and structures. Independent contract research, development and consultancy services have been provided to international clients for over fifty years.

Know-how, test facilities and expertise extend to pumping, sealing, mixing and contacting, separation, valves, pipeline pigging, pipe protection and multiphase flow.

Typical research projects include anaerobic digestion of sludge, in-pipe water treatment, slurry characterisation and transport and pump scheduling. Design reviews are provided for pumping stations, fluid systems and structures; extensive model testing facilities, physical and numerical, are in constant use; and analysis of pressure surge using Flowmaster software is available.

BHR Group transfers information and technology to a wide range of industries through software, publications, technical information services, conferences, seminars, post-graduate and specialist training.

The Conference will be held at the Cranfield Management Development Centre and is offering a preferential room rate to delegates until **30 May 2008**. All reservations received after this date will be accepted on a space available basis only and may not be at the preferential rate.

The CMDC is a popular hotel complex and can book up very quickly. We recommend that delegates book their overnight accommodation as early as possible **quoting reference 7324 for 16th & 17th June 2008**. Any rooms unsold will be released on 30th May 2008.

**To avoid disappointment and guarantee your accommodation, please fax or phone the CMDC reservations team at your earliest convenience at:**

Tel: +44 (0)1234 752707  Fax: +44 (0)1234 751707

For enquiries email: cmdcreservations@cranfield.ac.uk

Please provide the following information when contacting the reservation team. Please arrange your accommodation by phone or fax, **the CMDC cannot accept details of your credit card by email for security reasons.**

<table>
<thead>
<tr>
<th>PERSONAL INFORMATION</th>
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<tr>
<td>Last name:</td>
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<td>Telephone:</td>
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<td>Address:</td>
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<tr>
<th>HOTEL INFORMATION – quote reference number 7324</th>
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<tr>
<td>SINGLE ROOM with buffet breakfast – £84.90 (not including VAT)</td>
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<td>Credit card type:</td>
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<td>Expiry date:</td>
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Full payment will be made on departure from the hotel. Your credit card guarantees your reservation only.

**CANCELLATION:** 14 days prior to arrival. All reservations must be cancelled or amended no later than 14 days prior to the day of arrival or full charges shall apply.
INVOICE AND REGISTRATION FORM

4th International Conference

WATER AND WASTEWATER PUMPING STATIONS

Cranfield, UK: 17–19 June 2008

Your details

Please complete in block letters ticking appropriate boxes

[ ] Prof  [ ] Dr  [ ] Mr  [ ] Mrs  [ ] Miss  [ ] Ms

Last name

First name

Position

Company

Company VAT Number

Address

Post/Zip Code

Country

Telephone

Fax

Email

Dietary requirements or special requests

Signature

Date

[ ] I am unable to attend the conference but am interested in purchasing the proceedings

Please complete and return to:

Mrs Marian Rolfe

Tel: +44 (0)1234 750422

BHR Group Limited

Fax: +44 (0)1234 750074

The Fluid Engineering Centre

Email: mrolfe@bhrgroup.com

Cranfield, Bedfordshire MK43 0AJ, UK

www.bhrconferences.com

Registered in England No. 2420351

VAT Reg No. 536 4271 46

Please note that your name and company will be included in the List of Participants for the conference. This list will be made available to delegates, sponsors and exhibitors of the conference. If you do not wish your name and company to appear in the List of Participants please tick here ++]=. If you do not wish your name and address to be forwarded to conference sponsors and exhibitors please tick here ]=] .

We would like to keep you informed of other relevant BHR Group conferences and services. This will be carried out in accordance with The Data Protection Act 1998. Please write to the Conference Department, BHR Group, Cranfield, Bedfordshire, MK43 0AJ if you do not want to receive this information.
**CONFERENCE CODE: WWPS08**  
VAT is charged at 17.5%

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<td>Rising star</td>
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| One day fee                          | 564.00        | 721.92        | 1128.00       |                 |

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<th>Conference Dinner: # ...... extra tickets x £35 + VAT</th>
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<td>52.64</td>
<td>82.25</td>
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*Early bird rate: if payment is not received by 16 May 2008, an invoice for the full rate will be automatically sent.*

Registration fees include attendance at technical sessions, the gala dinner, and lunch and refreshments during the conference. Delegates will also receive a bag, printed conference proceedings and CD.

**PAYMENT**  
*(Please tick relevant box and complete as appropriate)*

- [ ] I attach herewith a purchase order or
- [ ] The fees will be settled by bank transfer direct to the BHR Group account

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I am a member of [ ] IAHR [ ] The Pump Centre [ ] British Water [ ] BPMA and qualify for a 10% discount

**TOTAL (full payment must accompany this form)**