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Take a fresh look at energy efficient building control

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A Message from the Chairman

I welcome you to this special autumn edition of the Societies’ newsletter in our 10th Anniversary year. Our newsletter continues to be a focus for what the Society is contributing to its’ membership and the wider industry at large. We at the Society continue to be very proud of this professional production and this flagship document shows our valued commitment within the building services sector.

As we enter the autumn of 2013 the overall economic outlook is more buoyant and optimistic and there are now real signs of stability and growth in the general market place.

I would first like to officially congratulate one of our Honorary Fellows Chris Sneath who has been appointed a Member of the Order of the British Empire (MBE) in recognition of his outstanding service to the heating and plumbing sectors. Chris has been a very strong supporter of our industry and on behalf of the Society I would pass on our very best wishes.

To give you a membership update we have continued to see an increased growth in the overall Membership base which now stands at 197. We are now approaching 200 members which has been a long term goal of the Society. This figure will be a landmark for the Society and I look forward to reporting this within the next edition of our newsletter. There is also very good news in terms of our industry working group membership which I am pleased to announce has now reached a total of 54 members. We are very indebted to each and every industry member for their support that they have given and will continue to offer the Society.

Our CPD technical seminars have continued to take place over the last few months which continue to act as a focal point of knowledge transfer to our members. This is a key activity in what SoPHE can offer. A continued number of successful CPD technical presentations have been run on behalf of the Society in the other SoPHE Regions and I would like to once again thank all of those who have contributed to these successful events.

As I write this article our 10th Anniversary Dinner is due to take place before our annual dinner and the finalists will be present as part of our Annual Dinner celebrations. Our Honorary Fellowship award will also be presented on the night which I look forward to announcing. I very much look forward to welcoming all our members and our VIP guests to our Annual SoPHE dinner in this our landmark year in the history of the Society.

I have previously reported that I am coordinating all of the issues that face our industry with the introduction of BS EN 806 & BS 8558 with the aim to representing these findings to the relevant British Standards Committee (BSI) in order to recommend amendments to the current standards. I would therefore again ask all members to send me any inconsistencies that they have for collation purposes. I believe that this is just one of the ways in which the Society is trying to influence industry standards.

I’m sure you will agree with me that as we celebrate our 10th Anniversary it has been a very memorable year for the Society and I look forward to all of your continued support as we enter 2014.

As your Chairman one of my key aims and objectives has been to continue to promote the Society within the general building services and construction industry at large. This will involve me in continuing to look for opportunities to do this on behalf of our membership and will remain a priority for me as your Chairman.

The next edition of the SoPHE newsletter, the winter edition, is due to be issued to members at the end of January 2014.

To end this special edition of the newsletter in our 10th anniversary year, it is always a pleasure in thanking those who support the Society, whose dedication, enthusiasm and passion enable us to keep improving and moving forward with the ultimate aim of raising the profile of our trusted Society and the valued role of the Public Health Engineer.

C. Northey
Chairman, SoPHE
Water Fittings Notification, Approved contractors and the new WaterSafe Installers’ Scheme.

By Steve Tuckwell
Technical Advisor, WRAS Ltd.

Notification
Before water supply plumbing work starts, installers need the water supplier’s consent for their planned installation. It’s the law - under the Water Supply (Water Fittings) Regulations and Scottish Water Byelaws. Breaching these regulations carries the risk of a criminal prosecution. Consent is obtained by notifying the water supplier, who enforces the regulations, with details of the location and the proposed work. The water supplier has ten working days in which to grant consent, if necessary with conditions (which must be followed), or to withhold consent. If there’s no response from the water supplier after ten days, consent is deemed to be granted, but of course the installation must be done in a way that complies with the regulations.

Notification gives the opportunity for the water supplier to assess the proposed installation for its compliance. Getting the design right before installation can avoid delay and additional cost arising from changes to newly-installed plumbing demanded by the water supplier, who can withhold the supply connection until the system complies. A leaflet entitled “Information on the Requirements for Notification” is available free on the WRAS website (www.wras.co.uk/Publications).

What’s notifiable?
All supply plumbing work in a new build is notifiable, as is extension or alteration of existing systems in non-domestic premises. Some specific types of fittings or appliances also need to be notified, such as booster pumps delivering more than 12 litres per minute, reverse osmosis units or water softeners, automatic garden watering systems and mechanical backflow prevention devices for fluid category 4 or 5 risks.
In Northern Ireland, in addition to the above, notification is required for grey water, recycled water, reclaimed water and rainwater harvesting systems; water systems for fire fighting, including domestic sprinklers; a flexible outlet or shower hose for use in conjunction with a WC; and a ‘shower- or bidet-toilet’ where a stream of water is provided for personal cleansing from below the spill-over level of the WC pan.

Installation
The regulations require installation, alteration, repair and disconnection to be done “in a workmanlike manner” and define this as conforming either to appropriate British Standards (especially BSEN 806 and BS 8558), to Government specifications (see the WRAS Water Regulations Guide) or to Approved Installation Methods (AIMs). AIMs and other leaflets with installation advice are available on the WRAS website (www.wras.co.uk/publications).

Approved plumbers
The regulations allow approved contractors (approved plumbers) to undertake some work without prior consent, giving the water supplier notice of their work afterwards. This can save customers time where alterations are required to existing plumbing systems in non-domestic premises. Customers can also be reassured that their approved plumber has demonstrated knowledge of the regulations, ensuring the work complies and issuing a certificate of compliance which is a legal defence if challenged by the water supplier.

What is the WaterSafe Installers Scheme?
WaterSafe has been created by water companies and the professional plumbing bodies of the UK as a national register for approved plumbing businesses and installers who demonstrate they undertake work which complies with the Water Fittings Regulations and Water Byelaws.

There are seven approved plumber schemes authorised by the Secretary of State, all with similar aims and requirements, but until now, finding an approved plumber has meant looking in seven different lists. Just launched, the WaterSafe Approved Installers’ Scheme brings approved plumbing businesses under one banner, making it easier to find one in your area and ensuring better customer service.

WaterSafe approved businesses must adhere to the WaterSafe customer commitments, conditions of membership and scheme rules, and will:
- ensure plumbing work is carried out by appropriately qualified individuals who will carry an identity card.
- ensure plumbing work is carried out in accordance with all statutory requirements including the Water Fittings Regulations and Byelaws.
- ensure that all relevant plumbing work is subject to the
Newspaper headlines back in August were writhing with images of a young boy frying an egg on the manhole cover during the extreme heat wave in China. Strange, but true! This prompted the editorial team to research plumbing related phenomena. Here are a couple of snippets that stood out for your enjoyment!

- Why anyone would feel the need to shower during a lightning storm is beyond the editorial team, however the Myth Busters team thoroughly investigated this very scenario. Within a lightning strike test facility, which generates 700,000 volts at 500,000 watts, (nowhere near a bolt of lightning), the experiment was conducted with electrical cabling next to the water services pipework. The end result produced large electrical explosions within the shower cubicle.....no readings could be read from the meter, however it was conclusive that you really didn’t want to be in the shower when lightning strikes!

Moving to Auckland, New Zealand, the ultimate prank was recently played by a group of “mates” with the help of a plumber, who rigged up the entire plumbing supply to beer kegs under the property in September! This prank made headlines around the southern hemisphere and has since gone viral with the assistance of 14 hidden cameras to record their “mates” reaction! Certainly provides a whole new spin to having beer on tap......every man’s dream!

Further details of the newly-launched scheme are available at the WaterSafe website (www.WaterSafe.org.uk) or by telephoning WRAS on 0333 207 9030.

Joining WaterSafe
WaterSafe offers a great opportunity for approved plumbing businesses to gain free promotion as a name customers can trust. For example, all UK water suppliers are promoting the Scheme to their customers. Members will be able to display WaterSafe branding on their vehicles, on stationery and on their websites to gain extra credibility. Plumbing businesses wishing to join WaterSafe should belong to one of the existing approved contractors schemes. It’s free to join for eligible existing approved plumbers. For details on how to join WaterSafe, see the website (www.WaterSafe.org.uk).

issue of a Completion Certificate.
- put their work right if it does not meet the requirements of the Water Fittings Regulations or Byelaws, enforced by the water supplier.
- have in place appropriate procedures for dealing with customer complaints in a speedy and efficient manner.

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Water scarcity mitigating the risk

Paul Angus, Hydraulic / Public Health Engineering Team Leader at WSP Sydney, discusses the importance of water conservation and the merits of creating a water strategy to mitigate the risks of water scarcity and take advantage of the vast opportunities.

In accordance with BS 31000:2009— risk management, Principles and guidelines, the likelihood and consequences of the water supply impacts of climate change can be classed as extreme. The changes will occur over the same time frame that engineering assets are designed for (i.e. a design life of 80-150 years). As climate change intensifies, water supply constraints, either through scarcity of supply interruptions from extreme events, will lead to increasing pressure for businesses to implement water efficiency measures.

How does this risk translate to a building or a facility? Water is often not seen as a high business risk based on its relatively low cost, but risk lies in the security of its supply, which is paramount to the continuity of a business. In a building, if water supply is cut for any given reason, for a period of time the building becomes uninhabitable, unproductive and, as such, a loss of earnings will be incurred, whatever the nature of the business.

For example, data storage is one of the major onsite services that a building requires to operate. Because water is used as part of the building’s data room cooling system any water supply issues will impact a tenant’s productivity and profitability. From a risk perspective, it makes good business sense to mitigate, where possible, against the risks associated with scarcity of water and interruptions to water supply.

In order to build confidence with tenants and investors alike, it is paramount to ensure a water strategy is in place. It can be applied to any commercial, retail, industrial and/or public sector facility where, in the event of water failure, any water-reliant systems, for example fire protection systems, are fully considered.

Firstly, a building’s water footprint needs to be understood. How much water is being used productively, or wasted unnecessarily, where is it being used and for what purpose? Water audits and water metering programs play pivotal roles in understanding a water footprint. They will draw attention to areas of unusually high consumption or aging infrastructure that is soon to become a problem.

Various studies undertaken globally indicate that by connecting water meters (and sub meters in tenanted areas) to a Building Management System (BMS), water usage can be reduced through the provision of data changing water use behaviours. Once the building’s water footprint is understood, an informed plan of action can be developed to mitigate risk. Such plans should include the detection of leaks and upgrades to aging water infrastructure.

On average, approximately 10% of a buildings water usage is from undetected leaks. The majority of new buildings have systems incorporated to detect water leakage as they occur, saving vast amounts of time, labour, expense and water related damages. When retrofitting a building, these systems should be considered.

Issues associated with aging infrastructure, such as plumbing plant, pipework and sanitary fixtures often escalate and can require immediate action. When undertaking these upgrades, reactive or quick fix practises should be avoided, as they will inevitably cause more financial burden than relief. Taking a proactive approach to upgrades is beneficial. For example, replacing out of date, inefficient plumbing fixtures with low-flow outlets, or alternatively providing fixtures with aerators to reduce water consumption are...
effective methods of addressing water efficiency issues that can be significant savings associated within a complex building with multiple fixtures and fittings.

However, the full extent of other consequences should be considered. For example, installing low flow fixtures and in conjunction within existing extensive horizontal high level sanitary drainage runs can cause blockages. Retrofitting waterless urinals may seem an effective solution; however existing waste pipework requires to be fully assessed, as the pH content of urine can quickly corrode existing copper waste pipework, making a quick solution an expensive high priority issue to replace the pipework. These situations are rarely budgeted for, straining an already limited budget, and causing frustrations for building operations staff and tenants.

Any water strategy needs to look at mitigating risks and maximising opportunities. Such opportunities may include the payback and lifecycle analysis of system upgrades and assessment of water reuse and recycling opportunities. For example, WSP are providing an integrated service with environmentally sustainable design a focus of the regeneration of the Central Park Precinct, Sydney, Australia. This development aims to be on the forefront of environmental sustainability initiatives across the country by seeking both a six star energy and water rating. The water usage for the Cooling Towers, were recognised as a primary consuming element, will be minimised and replaced with recycled water provided by the recycled water treatment plant. Other sustainable measures include a recycled water network that has a membrane bioreactor (MBR) plant in the basement of one of the residential buildings. Rainwater from roofs, stormwater, groundwater, sewage and irrigation water will all be reused reducing potable demand by up to 50 per cent.

It should be noted that opportunities can also present unaccounted for costs or risks. For example, when considering the opportunity to implement and retrofit systems, such as rainwater harvesting or grey water recycling systems, the full life-cycle cost needs to be considered, and water is just one cost. The energy required to pump the water from the basement to all WC fixtures within a high rise office building can have a significant impact on electrical loads and costs. Energy efficient pumps may help, however the full impact should be assessed, with consideration to the location of the water systems in retrofit applications.

The robust water strategy should focus on operational measures, as well as engineering solutions. It needs to avoid reactive measures, identifying both short and long term solutions that can be staged. It must also be integrated with other strategies, for example energy management, for a building is a complex web of interconnected systems that cannot operate in isolation of one another.

A strategy can be aligned with a range of industry benchmarking tools such as LEED, GreenStar and BREEAM. These tools can help a building’s performance to be publically recognised and as such, increase its overall asset value. A forward thinking water strategy is an important aspect to a building to not only mitigate the risk of business continuity, but also take advantage of opportunities, be they environmental, cost or reputation related opportunities.

Paul Angus is the Chairman of CIBSE New South Wales, based in Sydney, Australia. Paul has strong commercial and technical capability in developing and delivering hydraulic design strategies and solutions. He specialises in providing a sustainable approach to system design, including water conservation, recycling and generating innovative engineering solutions. As well as Central Park, WSP recently undertook a high profile relocation of Bloomberg offices into the existing building at 1 Bligh Street, CBD of Sydney achieving LEED Platinum rating, with a key emphasis on reducing water consumption.
Leading water control specialist Honeywell UK has provided reduced pressure zone (RPZ) valve equipment and support services to a water treatment works in County Durham, as part of a project for Northumbrian Water (NW).

A survey carried out by water regulations inspectors revealed that a new solution was required for the connections to the aluminium sulphate tanks to prevent any risk of back siphonage.

Honeywell was selected to handle the project based upon its extensive experience with backflow prevention, including previous projects undertaken with NW, alongside the reputation and proven quality of its RPZ products.

From the outset, Honeywell’s engineers worked closely with the NW team and system designers JN Bentley of Durham, to determine the exact requirements of the project to ensure the right products would be selected and installed. This included guidance on meeting necessary RPZ criteria as well as the planning of on-going test procedures that needed to be established. This part of the project was carried out in conjunction with Diamond Plumb of Macclesfield. Inspection and testing of the RPZ valve is carried out on an annual basis via use of the bypass line alongside standard water treatment maintenance procedures.

The first step in the project involved making alterations to an existing water system which involved the installation of a Honeywell RPZ BA298 150FA device to improve backflow prevention. In addition, a standard 500micron mesh strainer, resilient seated isolation valves, RPZ bypass line coupled with a double check valve, plus associated gravity PVC drainage pipework for the RPZ were also fitted. Work to ensure the domestic water supply upstream of the RPZ to the agreed termination point was also carried out as well as the chlorination of all new pipework.

Protection of water supply is crucial and requires long term commitment to testing and maintenance and in line with this, the new valve has been situated to enable sufficient space above and below for ease of access.

An additional requirement at the site related to the connection to the kitchen and mess room storage tank that was fed via the mains supply. A new connection was installed upstream of the RPZ and new pipework fitted to the kitchen facility and mess room area.

Northumbrian Water’s Steve Gray said: “We’ve worked
with the team from Honeywell on similar projects in the past which is why we called upon them again on this occasion. Honeywell provided extensive technical support and advice on the installation of the RPZ valve as well as ancillary equipment. The company’s technical expertise and knowledge on meeting regulation requirements proved to be invaluable on this upgrade project.”

RPZ valves are now widely used in the UK for the prevention of backflow pressure and ‘back siphonage’, providing protection against the contamination of potable mains cold water supply by non-potable fluid. Backflow can occur through thermal expansion, incorrectly connected pumps or simply from water pressure between plumbing systems. The risk of backflow contamination is something that always needs careful consideration due to the fact that plumbing systems are frequently being installed, altered, or extended.

The regulation governing the use of backflow prevention devices was introduced in July 1999 and is part of Statutory Instrument 1999 No 1148 The Water Supply (Water Fittings) Regulations 1999. All water supply companies in the UK must now comply with the regulation and take all necessary steps to ensure all installations meet these requirements.

The main method for backflow prevention is to use an air gap. For example, water can be discharged into a hose pipe, through a fitting that includes a gap or opening to the atmosphere. A tank provides an air gap, provided the water bay is above the overflow, so water always falls through air.

Different backflow prevention devices are available for varying levels of contamination risk. Identifying the correct device to install in each situation can be a complex procedure. It is the project manager’s job to identify which fluid category the water falls into and match this to the appropriate backflow prevention product and installation. This is based on the specification for backflow prevention arrangements and devices table as laid out by the official regulators, the Water Regulations Advisory Scheme (WRAS).

Matthew Watson, sales development manager for water products at Honeywell, said: “RPZ valves continue to be a growing market in the UK. These are essential devices which can significantly reduce the risk of ill-health and failure to recognise potential backflow and a cross-connection situation has criminal implications. Those responsible for water supply need to be familiar with the potential risks and carefully monitor systems to ensure that any backflow preventer is fitted in line with the Approved Installation Method (AIM), as specified by the UK Water Industry.”

Simply purchasing an RPZ valve and installing it is not the solution, as with most building services situations, the product must be right for the application. From an energy usage point of view, RPZ valves are superior to break tanks and booster pumps because no electric power is required and the sealed system reduces the risk of Legionella.

Northumbrian Water provides water and waste water services to 2.6 million customers in the North East, covering an area from the Scottish border southwards to North Yorkshire and westwards into Cumbria.
As always, our technical evenings have been well attended (a big “thank you” to all that come along) & our recent ones include Vivreau Ltd on 17th July with a presentation entitled “Drinking Water Ring Main – putting water into the forefront of design”.

The evening after that was on 18th September & was presented by Harmer Drainage / Alumasc Rainwater & WSP (our very own Carl Harrop!); the title of the presentation was “Blue roof thinking” – some very thought provoking & interesting questions were asked as well as a lively debate.

The next technical evening will be on 20th November – this will be a joint evening between ourselves & members of IHEEM NW. It will be presented by Hydrotec Ltd & is entitled “Biological Control for Domestic Water Systems including in Healthcare Premises”; I think that this will be of interest to a wide audience especially to those involved in healthcare projects.

Finally, the organisation / planning of the next SoPHE Northern Dinner is gathering pace; it will be held on Friday 9th May 2014 at the Midland Hotel, Manchester. Further details will be released as & when we get them but, please, make a note in your diary. Remember that, without your attendance at these events, they become a “non-entity”!!

SoPHE London Update
By Jassim Daureeawo

A number of technical Seminars have been organised by the London technical team including the following:

- The Shard – Designing and Installing Public Health Systems in Western Europe’s tallest building - ARUP and DG Robson Mechanical services
- Sprinkler Systems Design & Installation Guidance - Grundfos
- Conservation and Control of Water at the Point of use - Delabie
- Legionella Control - From a Public Health Design perspective - David Harper

It is apparent that technical forums have provided significant value to CIBSE SoPHE members during the last few months as these draw on our ability to include open discussion from a broad range of industry backgrounds. We feel that they are a useful addition to the manufactures technical seminars and allow our members to strengthening their knowledge on relevant technical topics. We believe the main reason that they have been such a success is due to the range of attendees, varying from designers/consultants, manufacturers and contractors. This enables the forums to benefit from three different perspectives resulting in a more holistic approach for the discussion. Thus, the Technical Committee will aim to organise more regular technical forums on a number of topics with the aim to enhance technical skills, with corresponding publication of technical notes that will be eventually be of benefit to all members and the Industry.

The next Technical forum will be focusing on Residential Sprinkler Design. The differentiation between the terms “Domestic” and “Residential” occupancies are clearly stated within Part B of the building regulations, when referring to sprinkler system. Therefore it is important to understand the technical implications when providing design solutions for domestic or residential sprinkler system. The design for residential and domestic systems shall be primarily based on but not limited to the following: “Sprinkler systems for residential and domestic occupancies - Code of practice” – BS 9251 and Approved Document B - Fire safety: Volume 1 – Dwelling houses.

The Technical Committee welcomes any suggestion on topics for future forums and this can be sent either to Steve Vaughan; steve.vaughan@aecom.com or Jassim Daureeawo : Jassim.daureeawo@meinhardt.co.uk.

Please note that the SoPHE LinkedIn group has a discussion forum on LinkedIn and feel free to use this forum as a tool, should you want
Picking up from the last newsletter, I said I would keep you all informed with the behind the scenes negotiations between myself - representing SoPHE here in WA and the AHSCA (Association of Hydraulic Service Consultants Australia) technical committee.

I have been campaigning on behalf of SoPHE to form a working relationship with our counterparts in the Southern Hemisphere. The AHSCA in WA shares our vision with reference to raising the profile of public health / hydraulic engineering in this part of the world.

CIBSE’s equivalent on the Australasian continent is ‘Engineers Australia’. One thing is clear, the AHSCA are keen to enter a formal working relationship with SoPHE. They see tremendous benefits in cross pollinating our engineering cultures. Both the AHSCA and SoPHE will reap the benefits of a close association. CIBSE will gain in having another like-minded group of engineers to strengthen their organization.

Following a special meeting with the AHSCA in July, discussions focused on the benefit to their members of joining CIBSE and I am delighted to say that the board decided unanimously to join. Only the technicalities stand between our two groups and I’m sure this will be resolved before the week is out. An arrangement has been made for Hywel Davies (CIBSE Technical Director) to contact me.

Like SoPHE, the AHSCA want to retain their autonomy as a group as they rightly should. More likely, they will join CIBSE as an affiliate organization under individual membership.

This will present fantastic opportunities between our two hemispheres.

For details of contacting your regional contact please refer overleaf.
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FEEDBACK

We would welcome any comments on this newsletter or contributions to future editions, in particular with regards to:

- Future events for consideration
- What should SoPHE be providing to our members
- Items or comments you think may be worth raising or informing your fellow members
- Technical articles from members, giving situations encountered and how they were overcome

Please email comments to Jonathan Gaunt or Paul Angus at
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