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Opening up your closed water systems management

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Closed water systems are majoritively those which heat and cool your buildings. They will be mainly sealed (apart from perhaps a make-up tank) and usually pressurised. The systems will have a level of inhibiting chemicals in them to stop corrosion and make the systems work more efficiently.

Unfortunately, most closed water systems are not truly closed and can lose water, whether by leaks or by maintenance work. If the water loss is not monitored then you can end up with incorrect chemical doses, which can result in damage to the pipework and costly repair bills.

The design of closed water systems means that they do not produce any aerosols under normal operating conditions and when combined with normal operating temperature these systems are usually considered low risk with regard to Legionella. However water quality does need careful monitoring to ensure efficient operation of the system.

If not managed effectively over the long term, deterioration of your closed water systems can lead to damage, loss and result in extensive remedial actions that will often incur significant cost.

This could include:

- Reduced system performance (and associated occupant complaints);
- Loss of service (possible loss of business function or tenant rent); and
- Reduction in the life of the assets (premature replacement of pipework systems, plant and associated equipment) and depreciated asset value.

Guidance and operational information is available in this area through documents such as, Water Treatment for Closed Heating and Cooling Systems (BG 50/2013) and BS 8552:2012 Sampling and monitoring of water from building services closed systems (Code of practice).

With greater awareness of the issues, building owners, landlords, tenants, managing agents and investors are identifying closed water systems management as a specific area of concern. What do you know about yours?

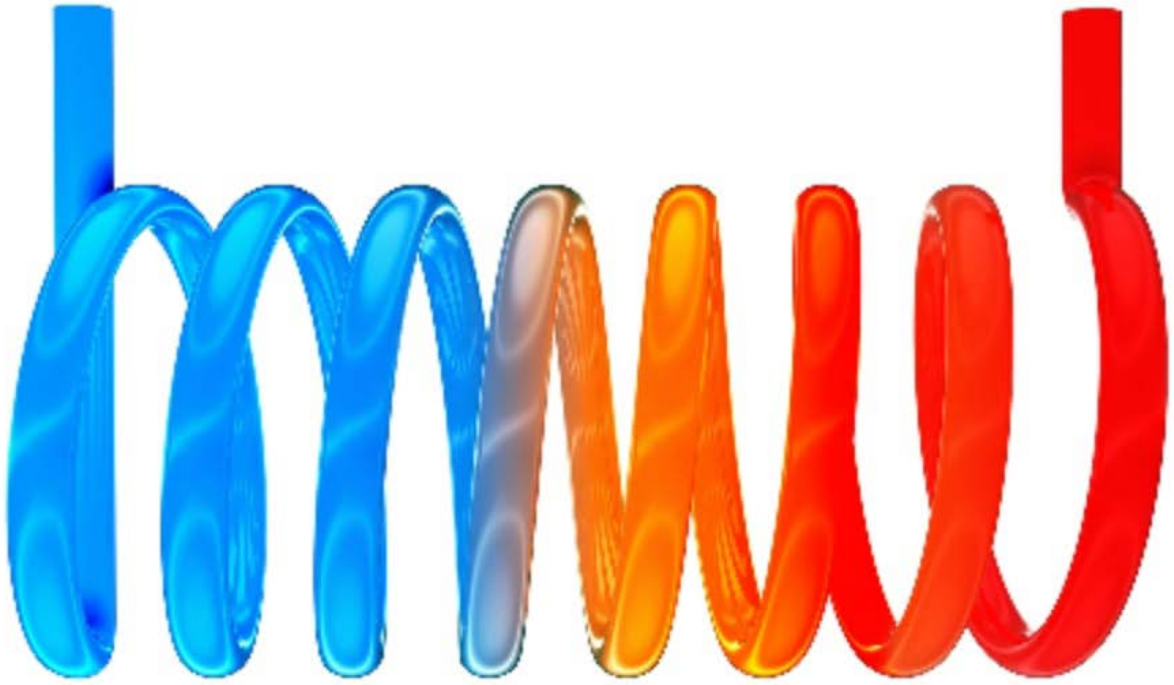
1. How is your closed water system configured and who has the responsibility for it?

The total responsibility for some systems falls to the owner/occupier of the premises or those with control of the services. These typically supply a building as a whole, but can supply tenant as well as landlord areas. They can range from large single to multiple systems each with their own control and dosing equipment.

For others premises, completely standalone systems can be present supplying various areas of the space, each under the control of the individual tenant or agent, owner or landlord. Some other can be configured where central plant supplies primary heating or chilling and this in turn is used to supply secondary systems within the building.

Knowing how your closed water system(s) is/are configured and who has ownership for the various parts is therefore fundamental to establishing the levels of responsibility for the system and so it's, maintenance, treatment performance.

With age, systems can also become modified or altered to best suit circumstances, so an understanding what the implications of these changes have to the whole is critical to ensuring the ongoing regime in place remains effective and unintended issues or problems do not arise.



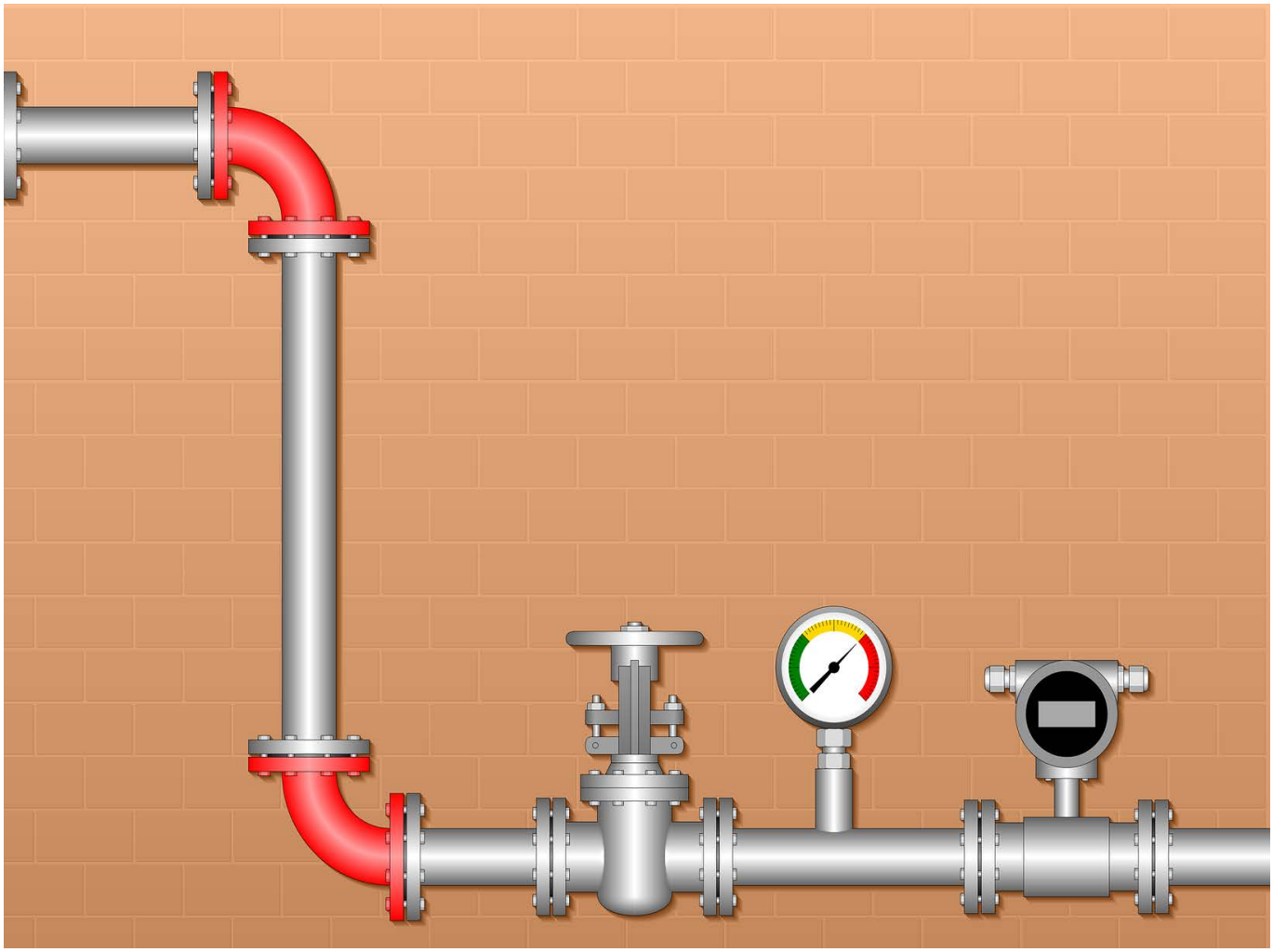
2. How are your closed water systems managed currently?

Historically closed water system management has been the domain of maintenance and water treatment companies. Because there was little in the way of statutory regulation governing the control of these systems (as opposed to, for example cooling towers) they often became invisible as services unless something had gone noticeably wrong.

The extent of management usually covered the physical condition of the system, together with chemical treatment to cover scale, corrosion and microbiological control and testing to determine the quality of the water.

As the treatment and testing regimes are typically directed by the water treatment company the whole management process tends to reside with them too. This situation, while workable, further compounds the increasing "invisibility" of these services as well as placing the responsibility for management and control with a sub-contractor having no direct contact with the building management actually responsible and paying for the service.

Dependent on the nature of the contract established between the parties working on closed water systems, the actual cost incurred in delivering the service to manage the system could become another invisible or unrecognised element.



3. How has your system been performing?

Because of the way in which closed water system management has evolved, we have found even accurate, up to date, information on the system(s) in place can be difficult to find. Contractors and subcontractors change, systems become modified and in instances plant and equipment (trench heating and plate heat exchangers to name but two) are missing completely.

Once the extent of the system and who is responsible for it is established, knowing the materials of construction is central to identifying the most appropriate treatment regime to be employed. Again understanding the impact modification to the system and the type of chemical treatment being used is critical if you are going to avoid inadvertently damaging the system.

Both system dosing and testing should cover everything from water usage (essential to flag the possible occurrence of leaks), to detailing the target values for all treatment chemicals added and the results and as needed actions taken to rectify any "out of spec" readings. It should also be taken into account that where and how many samples are collected is as important as what is actually being tested for and how much chemical is being used.

Results of closed system water analysis can end up in a range of locations from specific section of water management log books to one line additions on the bottom of a cooling tower testing report. Microbiological analysis, chemical results and system dosing can also end up being recorded in different places, making it increasingly difficult to identify the overall picture of performance, apparent trends and costs.

With clearly established guidance and standards in place, having a completely independent review of your closed water systems management is now much easier. It will look at how your system is currently configured, what testing and dosing is in place and how the system is performing. This is great first step in regaining control and putting the management responsibility back where it should be, for more information please visit

https://www.assurityconsulting.co.uk/services/closed-water-system-management