



Water Talk

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The Proper Care and Treatment of Closed Loops

The key to the proper care of any closed loop system is to keep the system as free from leaks as possible, and to ensure that microbiological control is maintained.

Water leaks in closed systems can become a huge headache if left uncorrected. If a hot water circulating system is leaking, expect scale and corrosion. If a chilled water system is leaking, expect oxygen corrosion.

Microbiological control is paramount in order to prevent the loss of inhibitor action, and to prevent the reduction in the pH buffering of the inhibitor.

PREVENTING LEAKS

Maintaining closed loops free of leaks is often beyond the control of the average water treatment service provider. One thing we can, and should do, is train our customer to regularly inspect their equipment and their mechanical rooms for the following:

1. Check and clean strainers in pressure reducing valves at least every six months.
2. Check to be sure pressure on equipment side of pressure reducing valve does not exceed rated pressure of valve.
3. Check to be sure air relief valve is not operating at less than its rated pressure. Repair or replace as necessary.
4. Check all Hoffman type air-relief valves to be sure they are not leaking water. If an air relief valve is found to be faulty, repair or replace as soon as possible.

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5. Check expansion tanks. If you find they are always full of water (no air cushion), suspect an air leak in tank, i.e. gauge glass bushings, plugged fittings, etc. This situation should be corrected as soon as possible.
6. Check for leaking in coils of air-handling units, repair if found to be leaking.
7. Check pump seals. Replace if leaking.
8. Replace any lost closed system chemical.

MICROBIOLOGICAL CONTROL IN CLOSED LOOPS

In closed chill water systems that are subjected to airborne or outside water contamination, a biocide must be used to prevent bacterial action that could cause loss of the nitrite portion of the inhibitor, in addition to the reduction of pH buffering capabilities of the inhibitor formula.

When bacterial contamination is suspected, and/or prevention of a potential problem causing loss of nitrite and/or pH buffering is desired, an alkaline compatible biocide should be used at sufficient dosage to insure sterilization.

To control bacteria in closed chill water systems treated with:

1. Borate-Nitrite type formulas, apply 7423 Microbiocide (isothiazolin) @ 150 ppm and maintain for 30 days. When system tests indicate a loss of inhibitor, apply additional amounts of 7423 Microbiocide to insure a minimum 150 ppm dosage is maintained for 30 days.
2. An alternate product would be A106 (polyquat). Apply A106 at 200 ppm and maintain for 30 days.
3. Molybdate based formulas, apply Aquacar 515 Microbiocide (glutaraldehyde) @ 150 ppm or 7423 Microbiocide @ 150 ppm, maintain for 30 days.
4. For special cases, EnviroAqua can provide a blended biocide formulation consisting of Bronopol and Isothiazolin, which is initially fed at a maximum level of 180 ppm, but can be effective at maintenance doses of 10 to 40 ppm.

Once control has been established a total bacteria count test will verify control. The decision to dump and flush the system can be made based strictly on the turbidity and suspended solids loading in the closed system water.

SPECIAL NOTE:

Systems containing glycol-type antifreeze materials will foam upon addition of biocides. To suppress foam conditions, apply EA602 all-purpose antifoam at 450 ppm.

AZOLE SUPPLEMENT

Some closed loop systems require an Azole supplement or adjunct if the existing treatment program did not contain a yellow metal inhibitor as required. Apply 100 to 120 ppm EA509 to maintain 20 to 30 ppm as tolyltriazole.