

Cooling Towers

Reduce Legionella risk and increase heat transfer
in cooling water treatment systems



Key Dryden Aqua products in the system

- AFM activated filter media
- Filters, pressure filters for AFM
- ZPM cavitating static mixer
- NoPhos for phosphate control
- APF AllPolyFloc
- DryOx Chlorine Dioxide tablets
- APF All PolyFloc

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Key Benefits

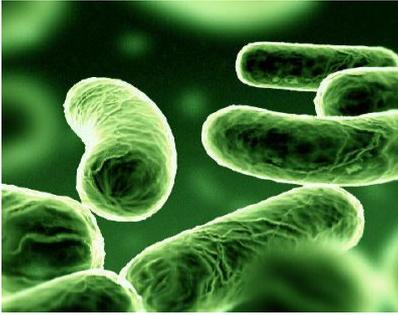
- Reduce water treatment costs
- Reduce bacteria and Legionella risk
- Increase heat transfer
- Simple retrofit

Clients

- Rolls Royce
- British Nuclear Fuels
- Kemira

The problem and challenges

Bacteria and legionella: Water treatment is essential for cooling tower recycled water to control pathogenic bacteria such as Legionella. The bacteria can only develop if you have a biofilm, and a biofilm can only develop if there is food source for the bacteria and lack of disinfecting or chemicals. Oxidizing agents include products such as; hypochlorite or bromine that are used to manage biofilm. However, the oxidising chemicals are volatile and are blown-off out the top of the cooling tower, or they are not effective enough in preventing biofilm formation.



Water treatment is required to improve water quality and reduce the food supply available for bacteria. Sand filtration is often used for this application, but sand releases free silica which can cause scaling or damage to membranes. Sand filters incubated bacteria and release them into the cooling tower. Sand filters also generate organic matter through the synthesis by autotrophic bacteria. Sand filter therefore cause an increased oxidation demand, increase costs and are a biological risk

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The solution

AFM (Active Filter Media) is a direct replacement for sand in sand filters and has the advantage that it does not contain nor does it release free silica. By simply replacing the sand with AFM,



filtration performance will increase by 100% (confirmed by an accredited laboratory). The lower organic / solids content, the lower the bacterial levels, which will reduce the public health risk, increase heat transfer and reduce biofilm induced corrosion of any

metal work.

Pressure filters for AFM; A good quality pressure sand filter should be used with AFM. Run phase 10m/hr, back-wash at 45m/hr. Air scour is not required. We can provide a complete packaged system including automatic valves and plc controller.

ZPM cavitating static mixer; The ZPM is flanged into the pipework between the



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pumps and the AFM filter. Flocculants and NoPhos are injected into the water by a ZPM cavitating static mixer. The ZPM insure optimum utilisation of the chemicals. The ZPM cavitates the water. The imploding nano bubbles helps to disinfect the water and minimises the use of chemicals.



NoPhos & APF; both of these products are liquids that are injected in to the water via the ZPM. NoPhos remove phosphate and if there is zero phosphate in the water bacteria and algae cannot grow. APF is a multi-spectrum coagulant and flocculent. Much more effective than any single component products

DryOx Chlorine Dioxide tablets; Biofilm becomes tolerant to hypochlorite and bromine products, even at a high concentration. However biofilm cannot adapt to lipid soluble chlorine dioxide because it can diffuse through the liposaccharide biofilm. DryOx should be used in combination with Hypochlorite. A treatment once a week, 1 x 20g tablet per 5 m3 of water recycled should be sufficient to prevent biofilm formation. Treatment performance can be checked using our ATP monitor for confirmation.

