+61 1300 303 281
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DMI-65 ADVANTAGES

- ✓Prevents staining
- ✓Save on costly membrane cleaning and replacement
- ✓Significantly improve system performance reducing initial system capital investment
- ✓High Disinfection rate achieved
- ✓No leaching of chemicals
- ✓Substantial whole of life cost savings

DMI-65 IS USED IN:

- ✓ Reverse Osmosis Pre-treatment
- ✓ Drinking Water Treatment
- ✓ Arsenic Removal
- ✓ Irrigation Systems
- ✓ Landscape Reticulation
- ✓ Cooling Towers and Boilers
- ✓ Environmental Dewatering
- ✓ Industrial Applications
- ✓ Food and Beverage

WATER IRRIGATION SYSTEMS

Irrigators are facing ever increasing demands to improve their water use processes, especially in an environment where available water resources are becoming scarce due to competing demands. Demand for groundwater is an increasing source of water for irrigators, forcing the use of a lower quality resource that may have been rejected in the past. This water will require treatment prior to use.

Iron is essential nutrient to plants, however in large amount it causes toxicity and deterioration of soil quality. Iron binds phosphorus and molybdenum, essential nutrients, reducing their availability to the plants. In addition the imbalance of a few nutrients has a domino effect on toxicity levels and availability of other nutrients. When water is sprayed on plant leaves, iron may precipitate to form slime or light brown spots which interfere with availability of sunlight and general biological processes and adversely affect the product's appearance and marketability. More soil conditioners, fertilisers and chemicals to treat plant diseases are needed to counterbalance the damages caused by excessive iron in irrigation water. As such, there are recommended limits to the concentration of iron in irrigation waters.

Broadcast sprinkler systems use water inefficiently, and in some jurisdictions the practice has been banned or is in the process of being phased out. This will require migration to drip feed systems, which are very susceptible to clogging problems when water sources contain Iron and manganese contamination as well as particulate matter, including debris or algae. Clogging of drip feed systems results in very high maintenance overheads and loss of production. The problem can be reduced by improving the quality of irrigation water.

Apart from aesthetic problems, irrigating with large amount of iron in the water is not a long term sustainable solution. The short term (20 years) trigger value for iron toxicity and soil deterioration is a maximum of 10 mg/l in the water used for irrigation.

Typical sources of iron fouling are:

- Anoxic aquifers containing soluble divalent iron and/or manganese
- Hydroxide flocs of oxidized iron and/or manganese from raw water
- Natural organic matter (NOM) containing iron complexes
- Hydroxide flocs from coagulation process
- Corrosion products from piping materials used for the feed water
- Silicates containing iron

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Incorporation of a DMI-65 filtration will materially reduce these symptoms as well as benefitting the total filtration system by performing disinfection action and mechanical filtration of undissolved solids.

DMI-65 is an extremely powerful silica sand based catalytic action water filtration media that is designed for the removal of Iron and Manganese without the use of potassium permanganate through an Advanced Oxidation Process.

DMI-65 is infused technology and not just a surface coating technology, unlike other catalytic water filtration media, which removes the chance of any chemical leaching into the water stream.

In order to begin the process of oxidation of the iron (and manganese) in solution DMI-65 is designed to operate in the presence of chlorine or other oxidant. In this process the oxidant removes electrons and is consumed in the process. The operator needs to ensure that there is a 0.1 – 0.3 ppm free chlorine residual in the effluent water. Chlorine, fed as sodium hypochlorite or bleach (12.5% NaOCl), is the preferred oxidant since it is relatively inexpensive, readily available around the world and it is effective. It also performs the vast majority of any disinfectant process.

DMI-65 has been certified to the US Standard of NSF/ANSI 61 for Drinking Water System Components and for use in England and Wales Under Regulation 31(4)(a) of the water supply (Water Quality) regulations 2010 and has also been tested by many other water treatment authorities and laboratories.

DMI-65 is manufactured in Australia.

Case History

Lake Alexandria Growers Turning Desal Water Into Wine.

A group of Langhorne Creek, South Australia producers have become the first to make the waters of Lake Alexandria usable for irrigation at two local vinyeards and one local turf farm. Lake Alexandria is renowned to be brackish salty water also containing colloidal and insoluble iron. Prior to the 2 million dollar desalination was commissioned by International Company Biosystems Group, business growers such as Kirribilly Viticulture, Lawsim Vinyards and Borman Turf all were relying on iron contaminated, salty lake or bore water to irrigate their vineyards and lawn farms. The salt and iron would inhibit the growth of plants and block irrigation lines.

The plant's construction was designed by biosystems despite growers being told desalinating the turbid, brackish and iron contaminated water was not possible because it was too contaminated with silt. However water is pumped from Lake Alexandria, and treated through a series of Biosystems clarifiers and sand filters to remove silt and reduce turbidity. One of the final filter treatments, prior to the reverse osmosis (RO) treatement, DMI-65 is

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used to remove traces of colloidal and insoluble iron that may create nuisance bio fouling and clogging of the RO membranes, and down stream irrigation systems, drip feeders and sprinklers.

Unlike ion exchange resins where higher regenerant dosages will increase the ion exchange capacity, NaOCl residuals or concentrations higher than required to oxidize the Fe and Mn do not increase the oxidative properties of the media. Additionally, since the media is often used to pretreat waters prior to an RO system a higher free chlorine residual would require more extensive post treatment to reduce the residual and protect the membranes from chlorine attack.
The success of the project has secured future of the three business by securing up to 3 megalitres per day of high quality purified water to hundreds of hectares of vinyards and turf farms. Helping to improve the soil condition of the local environment and also the productivity of the vines and lawn farm. In turn securing the jobs and lively hoods of the people who own, work use the water provided by the desal plant at Lake Alexanrdia.

Advantages of using DMI-65 in Water Irrigation

IRON AND MANGANESE BLOCKAGE
Clogging of drip feed systems due to iron and manganese residue results in very high maintenance overheads and loss of production. DMI-65 efficiently removes dissolved iron to the almost undetectable levels as low as 0.001 PPM and manganese to 0.001 PPM as well as particulate.

REDUCED COSTS
The total cost of the iron and manganese removal water filtration system is significantly less than alternative solutions, the effectiveness, but relative simplicity, of DMI-65 based systems reduces the upfront capital expenditure on plant complexity as well as the ongoing operational expenditure in chemicals, power and backwash waste water recovery.

HIGH FLOW RATES
The infused technology of DMI-65 promotes the highest oxidation rate of any catalytic filtration media. This permits a significantly higher water flow rate to achieve the same level of iron and manganese removal. DMI-65 can operate at linear filtration velocities up to twice that of conventional media with a corresponding reduction in capital equipment costs.

HIGH LOAD CAPACITY
Because of the increased surface area due to the micro-porous structure of the matrix material, the DMI-65 also has higher iron and manganese load capacity which can extend the duration of filter runs and the time between backwashing, thereby reducing downtime, operating expense and wastage.

REGENERATION NOT REQUIRED
The media operates with a continuous injection of sodium hypochlorite at low residual levels (0.1 to 0.3 ppm) which eliminates the need for Potassium Permanganate.

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WIDE OPERATING ENVIRONMENT

Stable and satisfactory performance at pH 5.8 to 8.6 and a maximum operating temperature of 113° F (45°C) reduces the need for investment to alter the operating environment.

LONG LIFE

DMI-65 is not consumed in the process giving it an expected operational life of up to 10 years, providing considerable advantages over other processes or media. The media does not display a decaying capacity to do its catalytic work. Over the 5 to 10 year period, through many backwashing operations of the bed to remove retained solids, an attrition loss of the media occurs by contact between particles and mechanical abrasion