

DMI-65 ADVANTAGES

- ✓ Reduced downtime
- ✓ 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

REVERSE OSMOSIS

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.

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

The following are symptoms of iron and manganese fouling:

- Discoloration of membranes.
- Poor salt rejection on individual membrane test data.
- Low flow on individual membrane test data.
- Possible high pressure differential on individual membrane test data.
- High iron or manganese values reported in feed-water.
- High pressure differential reported on first array.

Incorporation of DMI-65 pretreatment filtration will materially reduce these symptoms as well as benefitting the total RO system.

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.

Unlike ion exchange resins where higher regenerant dosages will increase the ion exchange capacity, chlorine residuals or concentrations higher than required to oxidize the Fe and Mn do not increase the oxidative properties of the media. Additionally, a higher free chlorine residual in an RO system

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would require more extensive post treatment to reduce the residual and protect the membranes from chlorine attack.

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

A power plant in Central Texas had an RO system with a 30 year history of iron fouling of the cartridge guard filters and RO membranes. The Fe in the well water averaged 2.0 ppm and despite various equipment configurations they were unable to reduce it below 0.2 ppm. This resulted in frequent and costly replacement of the 5.0 micron filter cartridges. They had two 6' diameter filters, one with anthracite and one with Birm that were used in series in an attempt to alleviate the iron fouling. All of the existing media from these filters was removed and piped them to run in parallel. They then installed DMI-65 and had immediate success with the filter operation. The Iron in the effluent from the filters averages 0.007 ppm when measured using a Hach DR5000. Replacement of the cartridge filters went from days-or-weeks to months.

The Advantages of using DMI-65 in RO Water Treatment

MEMBRANE PROTECTION

The efficient removal of dissolved iron to almost undetectable levels as low as 0.001 PPM materially reduces the incidence of iron fouling which therefore reduces the need for membrane replacement and keeps the treatment system working at its optimal levels. Membranes are expensive, as is the time cost to replace them and the production downtime

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.

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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.

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, providing considerable advantages over other processes or media. The media does not display a decaying capacity to do its catalytic work. Over a 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.