+61 1300 303 281
info@dmi65.com

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

LANDSCAPE RETICULATION SYSTEMS

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.

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Iron fouling is very common. Like any fouling, it causes a performance loss of the membrane system, specifically flux loss. In addition, the presence of iron makes the membrane more susceptible to oxidation damage.

Iron dissolved in groundwater which is delivered via irrigation systems can produce unsightly rust stains on buildings, paths, fences and plants in many areas. The dissolved iron hydroxide from iron-rich groundwater commonly associated with organic sediments, acidic conditions, absence of dissolved oxygen and/or microbiological activity (iron bacteria). The result is rusty staining (reddish-brown sometimes accompanied by multi-coloured streaks) on any structure or plant receiving irrigation spray over an extended period. Associated black staining may be caused by the presence of soil carbon or manganese oxide. These rust stains resist cleaning with soaps, detergents and bleach.

Iron is the metal that is most abundant on Earth and is therefore very common in soils and groundwater. Dissolved iron occurs naturally in groundwater in concentrations of up to around 50 mg/L. Iron salts become increasingly soluble as groundwater becomes more acidic. In oxygen deprived and acidic groundwater (with a pH below 5), iron concentrations of between 1 and 20 mg/L are common (usually as stable carbonates). Iron is normally found dissolved in groundwater in the reduced ferrous form (Fe^{2+}) and oxidises to relatively insoluble ferric form (Fe^{3+}) when the pH of groundwater (alkalinity) is raised and it is exposed to oxygen in the air.

When acidic iron-rich groundwater is extracted and mixes with air, carbon dioxide and hydrogen sulfide (rotten egg gas) is frequently released, the pH rises and the iron is deposited as ferric hydroxide (rust) on any flat surface as water evaporates. Over time this oxide coating builds up causing discolouration particularly to light-coloured surfaces.

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Iron may also be naturally present in groundwater as slimy, sometimes foul smelling bacteria filaments (such as Acidithiobacillus ferrooxidans). These bacteria are harmless, unlikely to settle out, and discolour the water brown, often with an oily sheen.

Iron deposits and iron bacteria may cause encrustations and blockage problems in irrigation systems, especially those that rely on small orifices for pressure control or delivery via water drippers. Iron scale may also affect heat transfer in hot water systems.

Iron staining is unsightly, but shouldn't cause serious harm to plants, animals or humans or structural damage. With high concentrations of iron (more than 20 mg/L) some plants with iron staining may experience a reduction in photosynthesis and vigour.

Waters with iron concentrations above 1 mg/L (equivalent to one part per million) are most likely to produce iron staining.

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

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.

Case History

St John of God Bunbury health campus is located in the major regional centre in the south west of Western Australia. The 15 hectare site has extensive landscaping which is reticulated using ground water. As is typical of groundwater, it has high levels of iron (fe) and (Mn), which leave unsightly stains, red iron bio fouling and black manganese sludge on walk ways, feature walls, glass doors and windows

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After extensive testing it was identified that the existing manganese greensand based filtration system was capable of removing only some dissolved iron and had little or no effect on the manganese level.

The potassium permanganate based system was changed to a system using Quantum DMI-65 which increased the level of iron removal and also address the issue with manganese. The levels were reduced to well below the Australian Drinking Water Guidelines and World Health Organisation Standards for Drinking Water. Iron levels were reduced from 11.8 mg/l to 0.005 mg/l and manganese levels went from 0.49 mg/l to 0.001 mg/l. In addition there is also evidence that the DMI-65 positively removed other heavy metals such as Zinc (Zn), Barium (Ba) and Arsenic (As).

Lowest whole of life cost; Key sales points specific to RO

The infused technology of DMI-65 promotes the highest oxidation rate of any catalytic filtration media. As a consequence, this permits a significantly higher flow rate to achieve the same level of iron and manganese removal. Using DMI-65 will resolve your issues with Iron and Manganese staining

HIGH FLOW RATES

DMI-65 can operate at linear filtration velocities up to twice that of conventional media with a corresponding reduction in capital equipment costs.   This then translates to higher flow rates through the RO system, particularly due to the improved performance as a result of reduced iron fouling.

Because of increased surface area the micro-porous structure of the matric material used, the DMI-65 also has a higher load capacity, thereby extending the time between backwashing, thereby reducing downtime and wastage.

DMI-65 is very low maintenance, after initial activation, only sodium hypochlorite feed is required together with regular backwashing. It operates under a wide pH range, stable and satisfactory performance is achieved at pH 5.8 to 8.6.

The media does not have a coating in the traditional sense. The active components are not simply layered onto the surface but are applied with improved adherence through diffusion into the silica substrate. DMI-65 is not consumed in the process, providing considerable advantages over other processes or media does not display a decaying capacity to do its catalytic work. Over 5 to 10 years period, through many backwashing operations of the bed to remove retained solids, the catalytic layer is degraded by contact between particles and mechanical abrasion.