

#### **S1.4.2 PERFORMANCE ANALYSIS OF 20 MICRON SELF-CLEANING DISC FILTER VERSUS CARTRIDGE FILTERS FOR RO MEMBRANE PROTECTION AFTER MEDIA FILTRATION IN A SWRO SYSTEM**

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This analysis compared the use of traditional 20 micron cartridge filters versus self-cleaning disc filters as a 'safety stage' between media filtration and reverse osmosis (RO) membranes in seawater desalination systems (SWRO) over a testing period of five years. Items of interest for comparison were effluent water quality differences as well as OPEX savings due to reduction of labor and disposal costs related to used cartridges along with energy cost savings due to a decreased average pressure differential across the filter system.

The results show that the self-cleaning disc filters provide many benefits when considered as an alternative to the standard 20 micron cartridges. The disc filters were found to provide superior water quality, providing effluent with fewer total solids, more efficient removal of larger particles, stable effluent quality and better removal of dinoflagellates. The disc filters are not a consumable, but a self-cleaning media which eliminates disposal costs and drastically reduces labor costs associated with cartridge replacement. The disc filters are designed to operate with a low clean system pressure differential and to self-clean at a set point of 7 PSI resulting in an average pressure differential of 3-4 PSI, whereas the cartridge filters have an average pressure differential of 17 PSI. This leads to a reduction of energy costs related to pressure differential across the filter system.