Case Study

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Pre Filtration - Seawater desalination Plant

Binningup, Western Australia

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MASTERS OF FILTRATION

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Background

The Binningup Desalination plant is situated about 150 kilometers south of Perth. It is designed to supply water to the State Capital Perth as well as the nearby regional city of Bunbury and is known as the Southern Seawater Desalination Project. It is designed to deliver 100 Giga Liters of potable water per year or 20 % of Perth's current requirements. The desalination plant is separated in two stages, each stage capable of producing 50 Giga Liters per year sea water intake is 450 m offshore and at a depth of 18m from the shore. At the early days of this project, 32 filtration units were already purchased from a different vendor (Not Amiad). These filters supplied with 80 µm wedge-wire screen and based on a self-cleaning principle of reverse flow.



The Challenge

The original installed filters (not Amiad filter) were working for some short time properly. However, it was noticed that with any weather changes and storm event where the inlet suspended solids level increases the filters failed to clean themselves and did not provide reliable operation. This resulted in higher rejected water and therefore reduces the system efficiency drastically. To solve this problem, the operators had to pull the units apart and clean the filter screens manually on a regular basis. This alarmed the project stakeholders as the overall operating costs were dramatically increased with no consistent output of filtered water performances.

At this point the consultant (Worley Parsons) approached Amiad for a solution. The Amiad solution was yet to be approved by a pilot trial. A trial skid consists of a SAF 1500 Amiad filter with 200 µm weave-wire screen was installed on site. The analysis and results of the pilot was carried out by third party (Water Corporation and membrane supplier) who found the pilot successful and satisfactory for the task required.

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The Solution

The conclusion of the small-scale pilot resulted in a large-scale project using 32 x Mega EBS 40K Amiad filters with same screen type as used in the pilot, 200 µm weave-wire screen. The filter's body is designed per ASME standard and its material is carbon steel epoxy coated with rubber lined internally and SMO screen allowing the filter to work at seawater environment. The Amiad filters designed over two trains of 9,350 m3/h nominal (10,285 m3/h peak) per stage, total of two stages. Each stage has 16 x 600mm Mega EBS 40K automatic screen filter assemblies in sea water trim, arranged as two trains of eight filters.

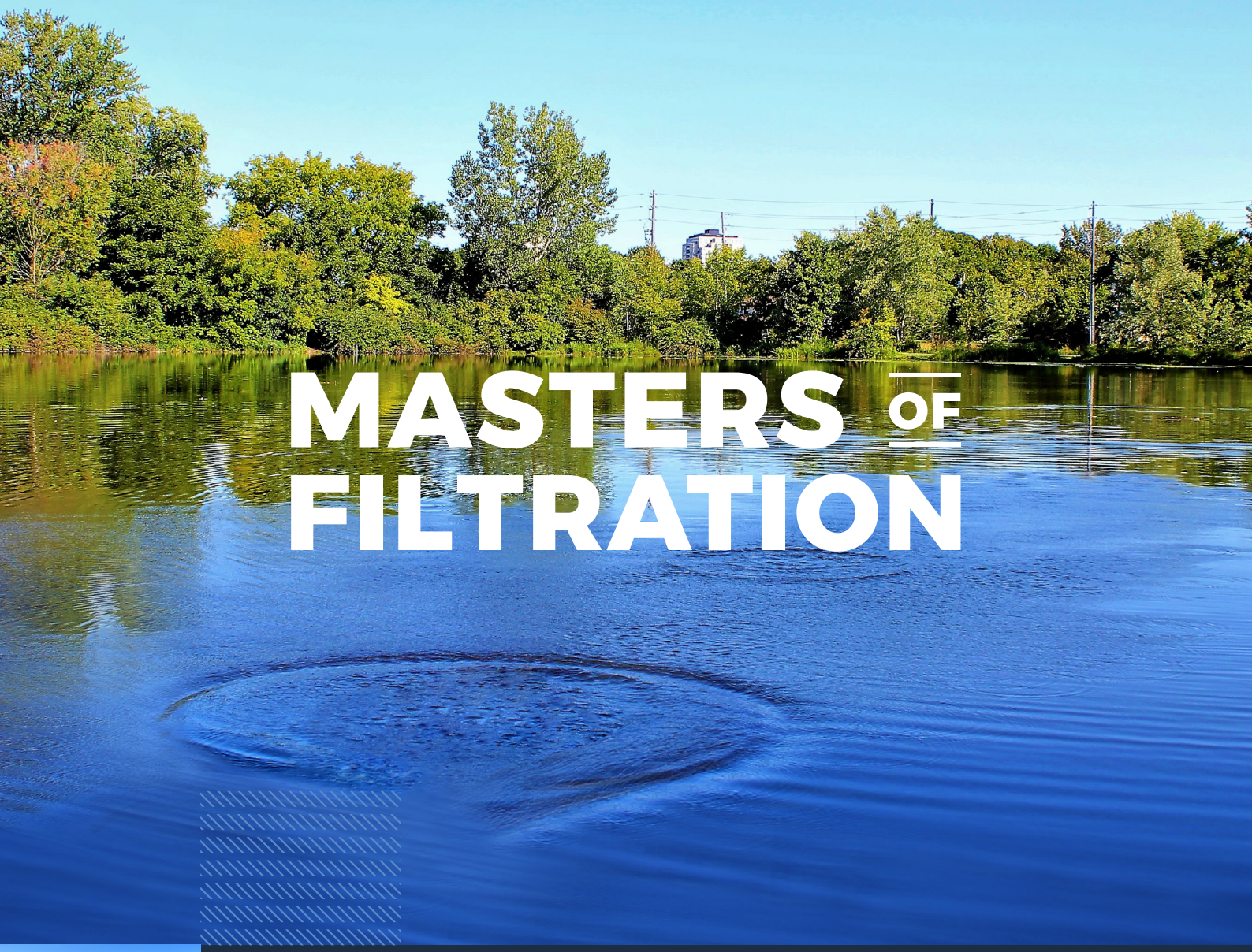




The Results

The changeover to the Amiad filters proved to be a success story. Since 2012, the 32 units of Mega EBS 40K filters have been commissioned and are in operation. These have been performing as intended without any interruption to filters operation regardless of weather changes. The Amiad filter provided efficient filtration with very low total water loss, proper self-cleaning of the screen, low power consumption and better filtration performances.

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