TOWARDS 'ZERO DISCHARGE'

BACKWASH DEWATERING UTILISING REVOLUTIONARY MICRO-SCREENING FILTRATION

A PROJECT ALLIANCE

Two South Australian companies, Baleen Filters and Osmoflo, both specialist water industry solutions providers, were engaged in delivering creative water solutions for Australia's largest natural gas infrastructure project (Gorgon) on Barrow Island in Western Australia.

Osmoflo designed and built four sea water reverse osmosis desalination plants incorporating Baleen Filters' filtration technology. The Baleen Filters de-water backwash streams without the use of chemicals resulting in greatly reduced treatment plant footprint and power requirement when compared to conventional systems, a primary concern when considering the sensitive ecology of the island. Importantly, the Baleen Filter provides an absolute level of barrier protection prior to outfall discharge regardless of inlet variations.

The Baleen Filters recover virtually all visible matter from the back-wash streams as a 'natural' wet mass with minimal water retention, suitable for separate disposal.

The installed reverse osmosis plants are supplied with intake flows which have been pre-treated via Disc Filters > Hydro-Cyclones > Micro-Filtration. The resulting back-wash streams from each of these processes are combined and then micro-screened to around 35 microns using Baleen Filters. The resulting filtrate (underflow) is then recycled back to the intake; comprising approximately 6 per cent of the intake flow thereby moving the pre-treatment plant towards a water 'zero discharge' situation.

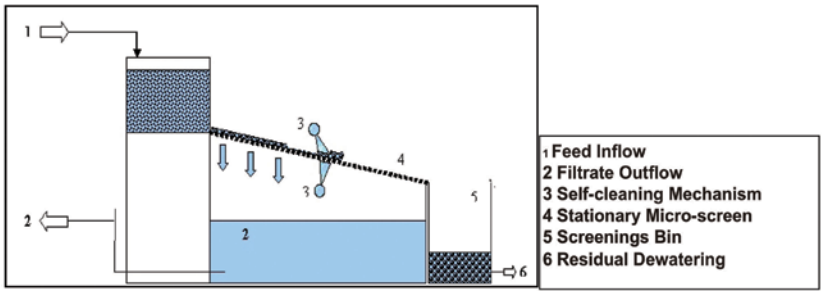
THE GORGON PROJECT

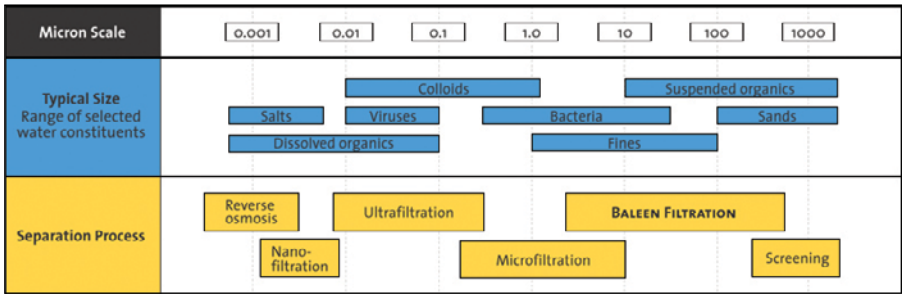
This iconic project covers the development of the greater Gorgon area gas fields, located about 130 kilometers off the north-west coast of Western Australia. The $43bn scope includes the construction of a 15 million tonne per annum (MTPA) Liquefied Natural Gas (LNG) Plant on Barrow Island and a Domestic Gas Plant with the capacity to provide 300 Tera-Joules per day to supply gas in Western Australia.

The desalination plants will service the construction and longer term needs of LNG operations including process demineralised water and potable supplies. The required high specification design includes cyclone rated equipment, together with strict environmental parameters requiring energy recovery, and maximizing the percentage of treated water that can be recovered from the sea-water source.

BALEEN FILTERS

The water industry's focus on filtration and separation technologies has been steadily growing in recent times, and with the uptake of innovative advances in micro-filtration and reverse osmosis techniques; the need for improved pre-treatment is becoming increasingly important.





Whilst filtration is possible at varying degrees of fineness from desalination (below 10 –3 microns) to gross pollutant removal (above 1 mm, 10 +3 microns), screening of difficult waste-waters (viz. 'trade wastes') below 1 mm is rarely seen.

This is primarily due to the presence of troublesome constituents or bio-foulants such as fat, grease, oil, lint, hair, fiber, industrial grit and other organic matter which rapidly 'entangle or 'blind' traditional filters and separators; Thus forcing water treatment practitioners to heavily rely upon biological means to consume or modify suspended matter – the general downside being the excessive amount of energy and consumables required to facilitate biodegradation processes in lieu of direct separation.

Baleen Filters Pty Ltd (based in Adelaide, Australia), was established in 1999 to commercialise an internationally patented filtration technology, marketed under the same name, and is specifically designed for screening suspended matter from water and other process streams. The name 'Baleen' is the anatomical name for a particular whalebone belonging to the group of filter-feeding whales.

It forms the mechanism which allows the whale to collect krill and other marine organisms during feeding, the sweeping action of its tongue and the reversal of water-flow as the whale dives and resurfaces enables the straining of food.

This ensures cleaning of the baleen prior to the whale's next meal. The Baleen Filter technology is an engineered adaption of this natural technique used by the Baleen whale.

The Baleen filtration technology was originally developed by the University of South Australia; quickly followed by full commercialisation.

Baleen is currently seeking to expand its penetration of international markets by partnering with appropriate entities involved in industrial equipment and services.

Baleen also offers packaged screening systems for clarification and recycling of process streams and environmental protection. Areas of application broadly span agriculture, food, mining and water treatment.

THE BALEEN ADVANTAGE

The Baleen Filter is fast becoming recognised as the 'missing link' in water treatment with the potential to 'change the face' of water treatment processes globally. Unlike other self-cleaning filters or separation technologies on the market, the Baleen Filter has clearly demonstrated the ability to filter out a wide range of contaminants to overcome many traditional limitations with conventional treatment methodology.

This means that treatment of process water need not require huge inputs of energy or chemicals to bring the water back to a suitable quality for re-use on a 'fit for purpose' standpoint.

For further information please visit www.baleenfilters.com