



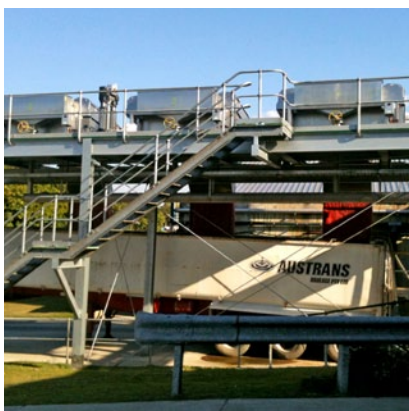
Baleen International

protect recover recycle re-use reclaim

Technology Introduction



Multi-filter installation



Introduction

The Baleen™ Filter is a unique self-cleaning filtration and separation technology that can be readily applied to any effluent or process water application regardless of industry, constituency or flowrate requirement – to protect, recover, recycle, re-use and reclaim resources the world-over.

Baleen user applications broadly span marine outfall protection, process-water refining and materials recovery, fit-for-purpose effluent re-use, inline water recycling, effluent polishing, sludge thickening and regulatory compliance.

No longer is the water 'treatment' practitioner limited to use of comparatively ineffective sedimentation, centrifugal and flotation technology when it comes to separation and clarification – Baleen can be readily employed to enhance, or even replace conventional technologies such as clarifiers, hydrocyclones, centrifuges, decanters and DAFF technology (and in many, traditionally challenging-cases even aerobic and/or anaerobic treatments) at a fraction of the environmental footprint and capital cost.

Baleen micro-screening links conventional coarse to fine screening platform technology to in-demand membrane filtration systems. Baleen is regarded by many as a highly disruptive technology due to its demonstrated ability to serve as a bridging technology for pre-treatment of ANY process water in preparation for membrane, chemical oxidation or disinfection processes.

In many cases, the Baleen Filter alleviates the need for chemical and energy intensive treatments based upon demonstrable comparison of before-filtration and after-filtration benefits – not only are substantial capital, operating and environmental benefits often apparent, but dramatically reduced maintenance is often commonplace with installation payback generally accounted for in months not years.



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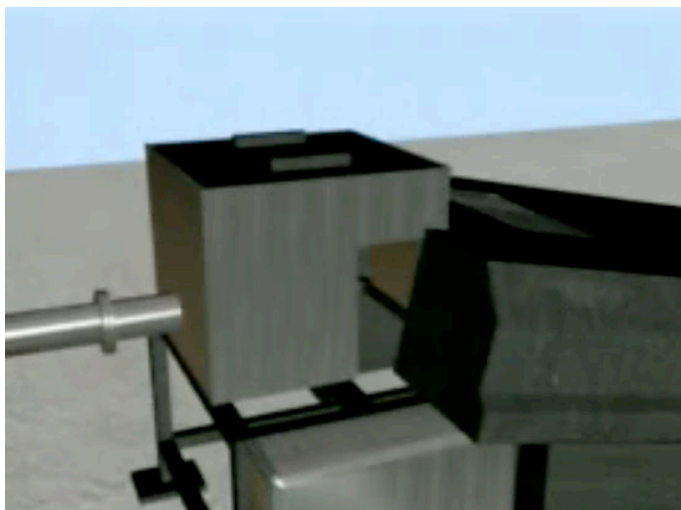
How it works

The Baleen™ filter, protected by international patents, is based upon a simple, yet ingenious 'double-act' of high pressure, low volume sprays, one of which dislodges material caught by the filter media, whilst the other sweeps it away for collection. As water flows through the filter, substances initially suspended in the water are left behind to accumulate and block the screen media before the 'double-act' effects their periodic removal.

Baleen's robust performance across the industry stems from its unique capability to sustainably clear the filter-screen of foulants during filtration to thereby sustain filter flux – a virtue not inherent with any other filter-system on the market of comparable performance.



View our animated video of 'How it works'



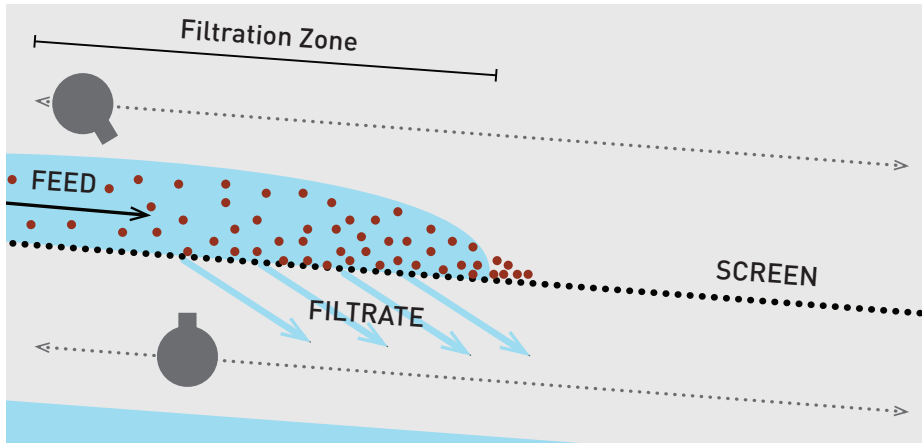


Figure 1: The Filtration Zone advances as the Screen blocks (without self-cleaning action)

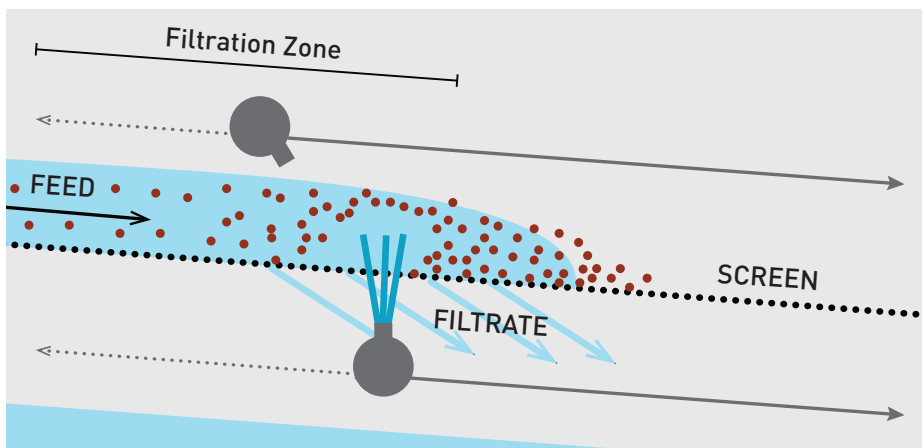


Figure 2: Self-cleaning pass initiated – Unblocking the Filtration Zone (by counter flow action only)

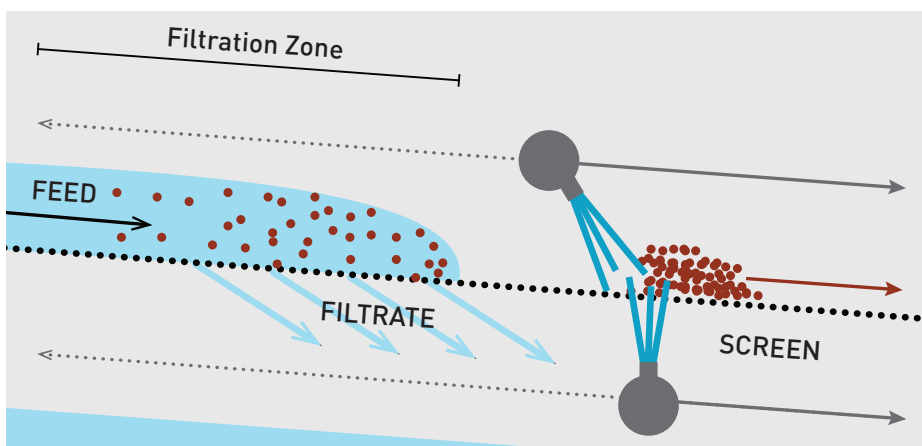
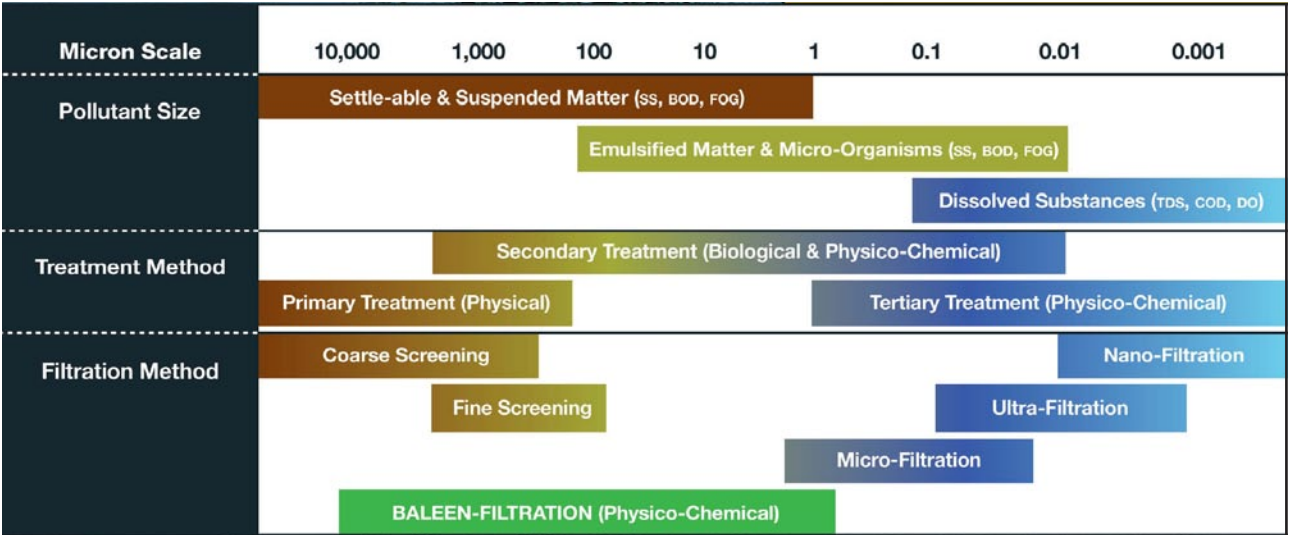


Figure 3: Self-cleaning pass concluded – Clearing the Filtration Zone (by combination counter and clearing flows)



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Why Baleen



water recycling made simple engineered by nature internationally awarded

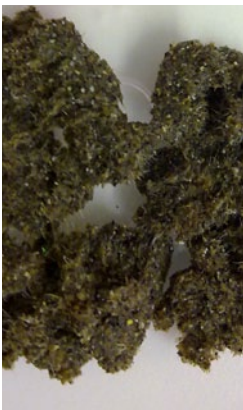
“Baleen, the missing-link in filtration, a greener path to water recycle and re-use.”



>1,000µm



>500µm



500<>300µm



300<>150µm



<50µm

Competitive advantages

Sedimentation typically retains settle-able solids to less than 100-microns in particle-size (of distinct density) but generally fail to retain dispersed suspension (such as biomass and 'floc') largely aqueous in composition – the problem is compounded when inflow constituency is biological active.

A similar situation lies with Chemically Assisted Sedimentation (CAS) and Flotation (DAF/DAFF) processes, which similarly fail to fully address constituents residing in suspension. In contrast, Baleen can readily separate and recover constituency (without loss or downtime) whether suspended, settleable or floatable based upon particle or droplet size, and constituent viscosity-difference e.g. fats, oils, foams, emulsions and polymer-dispersions all may be collected as screenings (of near 'spade-able' or 'naturally-wet' consistency).

Generally, the environmental footprint and/or operating cost of Baleen can in many cases be as little as 1/25th of traditional treatment alternatives. Whilst, for specific cases involving water reclamation, the capital cost of Baleen can be as little as 1/10th of competing MBR systems.

Interchangeable filter-screens spanning the 2-mm to 20-micron particle-size range are available, to enable selective separation of constituents from virtually any process water application – subject to performance specification.



Chemically Assisted Filtration (or CAF) for separation of colloidal matter from raw effluent.



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Client applications

Applications for the Baleen Filter technology appear infinite, only limited by the user's imagination, with applications broadly spanning several market sectors (applications) – Agriculture (algae), Food (fat) and Beverage (fibre) processing, Manufacturing (grit), Municipal (rag), Minerals (fines) and the Environment (outfall).

Many new applications for Baleen are evolving all the time in direct response to a growing need for finer and finer degrees of separation, fueled by an ever-increasing demand for reclamation of spent resources. The demand for both liquid and solid resource recovery will continue to raise Baleen's kudos as a 'much needed water technology' worldwide.

From a load-handling capability perspective, Baleen is able to offer operational benefits to the end-user in even the most arduous of applications, involving influent-TSS concentrations as high as 100,000ppm (10% solids) with performance subject only to free-water constituency requirements in the InFeed.

Some 150-installations and 500-test sites involving leading industry and government entities across eight countries (and growing) lay testament to Baleen's treatment-enhancing attributes.

The Baleen filter offers Best Practice opportunities across industry by enabling immediate unit-process improvements through implementation of 'Target The Source' Cleaner Production methodology.



Byproduct recovery



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Products

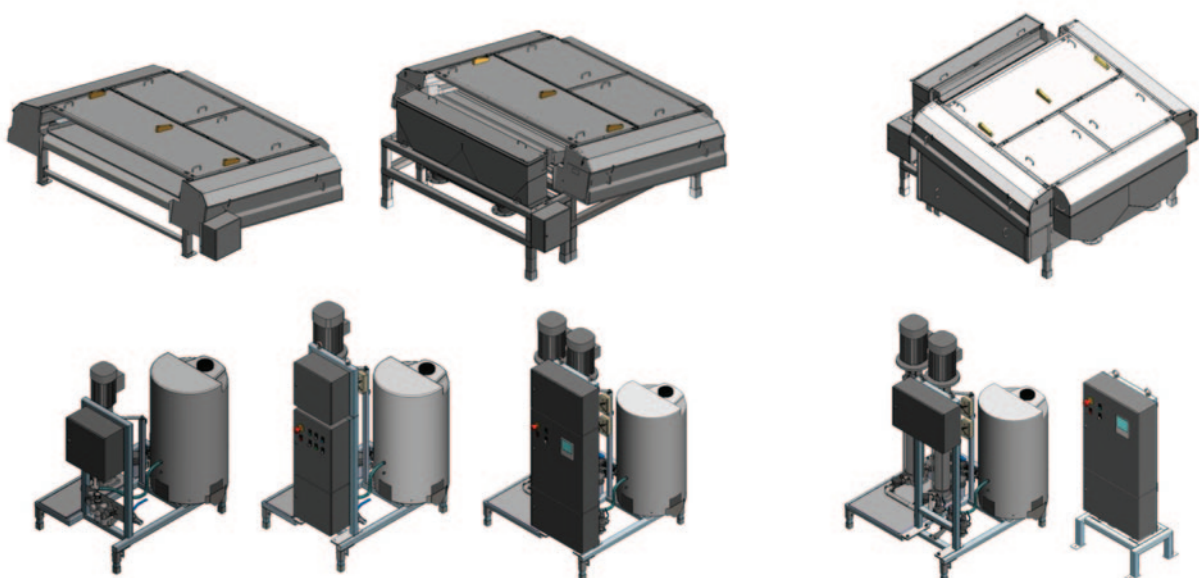
The Baleen filter is supplied in a range of product sizes ('05 to '60-Series) and formats (turnkey, user-install to stand-alone), to suit onsite requirements.

A range of onboard filter-control options are available: the -S (slave) option (which assumes the user takes governance); the -N (micro) option (which offers standard operator controls); the -B (basic) system (which includes essential monitoring controls, by inclusion of an ancillary Pump/Control unit, available in two design formats, to support a single filter-unit), and; the -A (advanced) system (which includes extended monitoring and operational features, by inclusion of an Advanced Pump/Control unit, also available in two design formats to support multiple filter-units).

Standard utility requirements for operation of Baleen comprise clean-dry 'instrument-quality' compressed air, pre-filtered water and power to Manufacturer's specification.

Product life-cycle is generally beyond 25-years subject to reasonable maintenance provisions and appropriate materials (of construction) selection. Product is currently manufactured from various grades of stainless steel construction to suit installation-requirements, with ongoing maintenance consideration typically much less than 5% of capital cost per annum.

The Baleen filter product range conforms to ISO quality requirements and offers a simple, targeted approach to many of the water industry's shortfalls when it comes to minimising environmental footprint.



Technical specifications

The Baleen filter unit will reasonably comply with the following attributes:

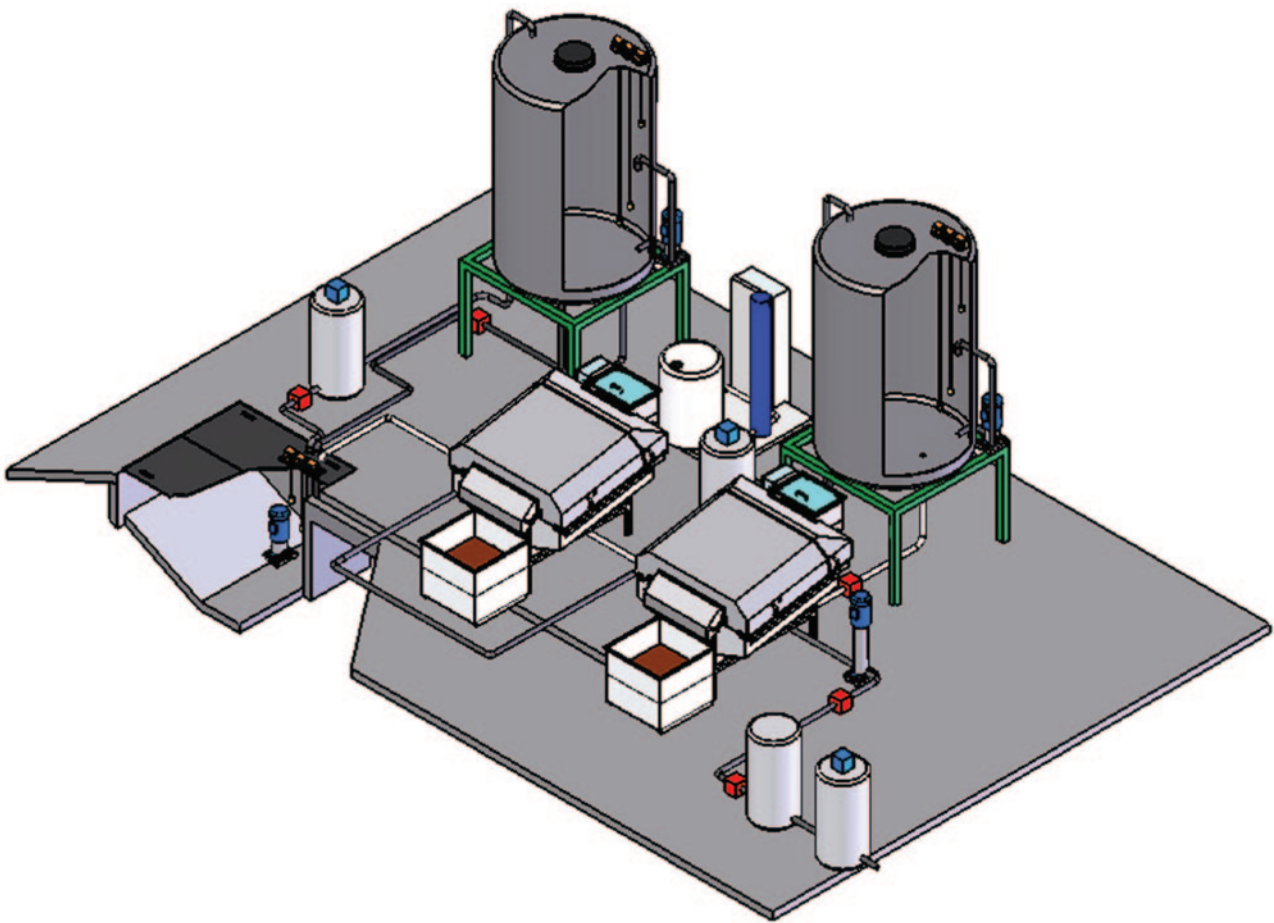
- (i) may operate without chemical assistance;
- (ii) will remove near 100% of suspended solids from the influent stream, as 'screenings', with a particle size greater than the filter-screen's specified Micron Rating, excluding aggregate filtrate constituents;
- (iii) will remove BOD from the influent stream that is directly associated with the 'screenings';
- (iv) may capture 'screenings' of near spade-able (or naturally wet) consistency after short-term dewatering provision;
- (v) will accept intermittent flows up to the specified Flowrate;
- (vi) will accept uninterrupted flows up to the specified Flowrate;
- (vii) will enable continuous operation at the specified Flowrate over a 24-hour period subject to basic O&M provisions;
- (viii) will enable intermittent operation at the specified Flowrate over a 24-hour period subject to basic O&M provisions;
- (ix) non-failure of all electrical, pneumatic and mechanical components outside of reasonable warranty (or fair wear and tear) provisions;



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Packaged systems

Greenfield or containerised





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Representative Locations



www.baleen.com

