# FilterClear®

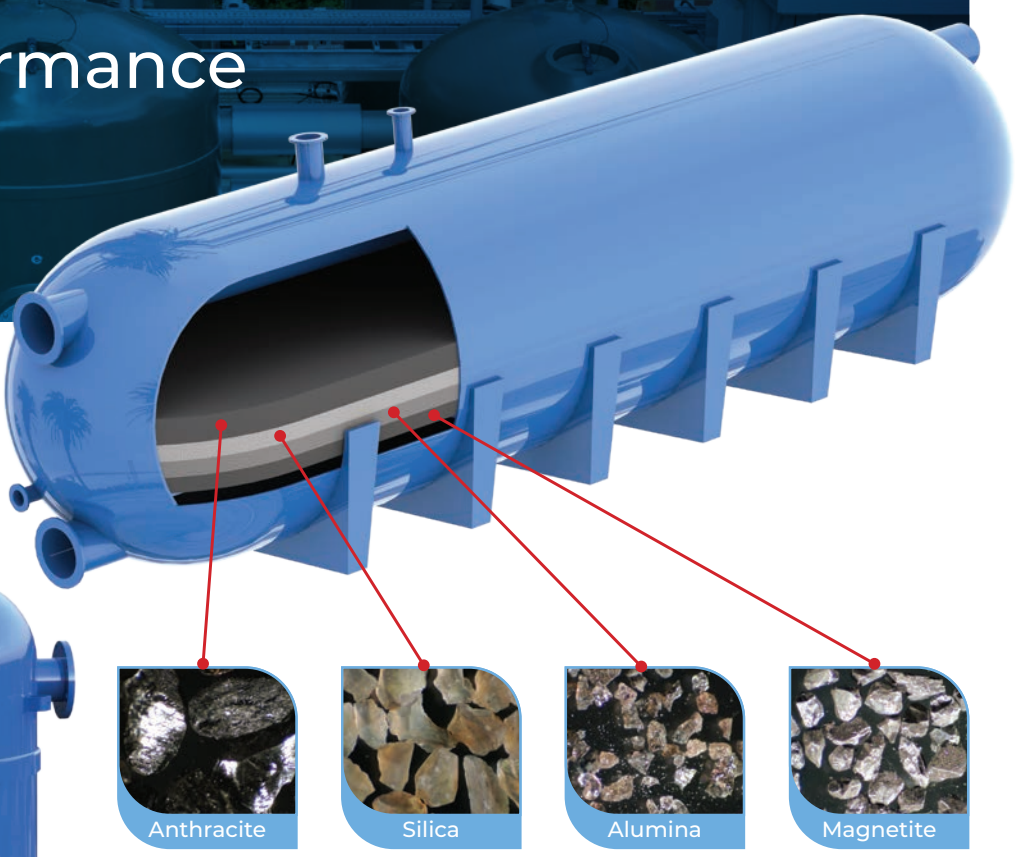
A BLUEWATER BIO TECHNOLOGY

## High Performance
Multimedia Depth
Filtration

BLUEWATER BIO

www.bluewaterbio.com

# Four Layer High Performance Multimedia Filtration




FilterClear® is a unique patented multimedia depth filter offering benefits in a wide variety of applications.

## Advantages

- High quality filtrate in a single step
- Compact footprint
- Package plants for off-site assembly and simple, quick installation
- High loading rate ( 25-40 $m^3/ m^2/ h$ )
- Robust performance
- Low daily backwash volume
- Simple, reliable, easy to maintain
- Advanced diagnostics

*"In my opinion, the performance of FilterClear is much better than any other options on the market."*

**Nick Andrews**
**Severn Trent Water, UK**

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FilterClear® is an award-winning multimedia depth filter capable of removing suspended solids from a wide range of waters, consistently and reliably with minimal operator intervention and simple maintenance.

Rotherwas

There are over 100 FilterClear® installations, treating waters such as secondary effluent at wastewater treatment plants, cooling waters at industrial sites and seawater at desalination plants.

## Applications

- Phosphorus removal in combination with dosing
- Desalination reverse osmosis pre-treatment
- Tertiary filtration of waste water for reuse or compliance with tight permits
- Industrial process, cooling, wastewater & reuse
- Potable water from surface or borehole
- Rainwater and greywater harvesting.

FilterClear® has an especially strong track record and is the preferred technology for phosphorus removal amongst most UK water companies.

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THE KING'S AWARDS FOR ENTERPRISE 2024 INNOVATION

**Best-in-class technology, recipient of a King's Award for Innovation in the UK.**

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FilterClear® is a multimedia depth filter which provides excellent suspended solids removal with highly efficient backwashing.

## Technology

**Multimedia Depth Filtration**
4 different media types have been selected based on particle size and density to ensure optimum filtration performance (900mm total depth).

**Backwashing**
Backwashing is efficient and the media are thoroughly cleaned. At the end of the backwashing cycle the different media return to their respective layers because of density differences.

**Automation**
FilterClear® is fully automatic with in-built real time monitoring systems to ensure optimum performance.

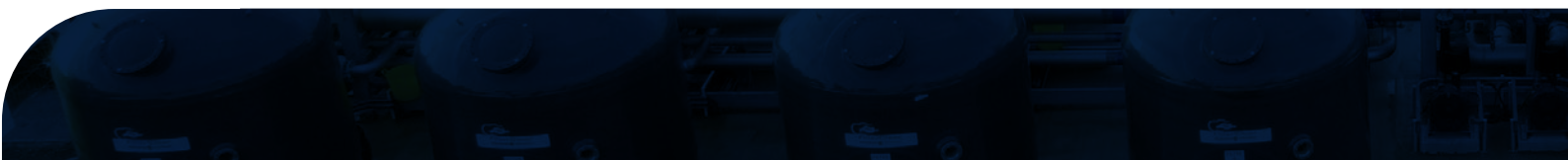
**Maintenance**
Simple, infrequent maintenance requirements. Utilising standard, common components.

## Phosphorus Removal Technology Comparison

| Item | FilterClear® | Cloth Media Filter | Ballasted Coagulation | Woven Fabric Discfilter |
|---|---|---|---|---|
| Effluent Quality | ★★★★★ | ★★☆☆☆ | ★★★★☆ | ★☆☆☆☆ |
| Process Robustness | ★★★★★ | ★★★☆☆ | ★★☆☆☆ | ★☆☆☆☆ |
| Maintenance | ★★★★★ | ★☆☆☆☆ | ★☆☆☆☆ | ★★★☆☆ |
| Trend monitoring & diagnostics | ★★★★★ | ★☆☆☆☆ | ★☆☆☆☆ | ★☆☆☆☆ |

## Desalination Pre-treatment Technology Comparison

| Item | FilterClear® | Dual Media Filter | Sintered Media | Ultrafiltration |
|---|---|---|---|---|
| Filtrate Quality | ★★★★★ | ★★☆☆☆ | ★★★★☆ | ★★★☆☆ |
| TOC Removal | ★★★★★ | ★★★★☆ | ★★★☆☆ | ★☆☆☆☆ |
| Tolerance of algal blooms | ★★★★★ | ★★☆☆☆ | ★★☆☆☆ | ★☆☆☆☆ |
| Compact Footprint | ★★★★★ | ★☆☆☆☆ | ★★★★☆ | ★★★★★ |



## Scottish Water: Loch Ascog WTW

Application: Potable water, removal of algae from loch water.
Application: Deep bed sand filter pre treatment.
Maximum flow: 2 x 30l/s filters
Commissioned: 2008. New upgrade in manufacture 2025
Two FilterClear filters, 2.0m diameter

## Severn Trent Water: Newthorpe WwTW

Application: Municipal wastewater – Phosphorus removal
Effluent type: Activated Sludge process.
Phosphorus Consent : 0.2mg/l TP
Maximum flow: 649l/s
Commissioned December 2024
Four FilterClear® filters, 32 $m^2$ each

## Wessex Water: Yeovil WRC

Application: Municipal wastewater – Phosphorus removal
Effluent type: Trickling filter process.
Phosphorus Consent : 0.65mg/l TP (Stretch target 0.5mg/l TP)
Maximum flow: 466l/s
Commissioned: July 2024
11 FilterClear filters, 2.8m diameter

## King Abdullah Univ. of Science & Technology: Saudi Arabia

Application: Pre-filtration for seawater desalination
Maximum flow: 1,750l/s
Average $SDI_{15}$: 2.3%
Commissioned: 2009, extended 2024
Five FilterClear filters, 38 $m^2$ each

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# Standardised Filter Skids

Three standardised FilterClear® skids have been developed to fulfil water companies' most common needs.
Please refer to Bluewater Bio for details of FilterClear® plants for flows above 180 l/s.

| Peak flow (l/s) | No. of filters | Filter dia. (mm) | Model Name | Footprint (m x m) | Backwash pump* (kW) | Air scour blower* (kW) | Backwash vol. ($m^3$) |
|---|---|---|---|---|---|---|---|
| **SMALL** | | | | | | | |
| 15 | 3 | 1000 | 3V1000 | 8.4 x 5.6 | 3 | 3 | 5.1 |
| 20 | 3 | 1200 | 3V1200 | 8.4 x 6.0 | 3 | 3 | 7.4 |
| 23 | 4 | 1000 | 4V1000 | 8.4 x 5.6 | 3 | 3 | 5.1 |
| 33 | 4 | 1200 | 4V1200 | 8.4 x 6.0 | 3 | 3 | 7.4 |
| **MEDIUM** | | | | | | | |
| 30 | 3 | 1400 | 3V1400 | 10.2 x 6.8 | 7.5 | 5.5 | 10 |
| 39 | 3 | 1600 | 3V1600 | 10.2 x 7.2 | 7.5 | 5.5 | 13 |
| 50 | 3 | 1800 | 3V1800 | 10.2 x 7.6 | 7.5 | 5.5 | 17 |
| 74 | 4 | 1800 | 4V1800 | 10.2 x 7.6 | 7.5 | 5.5 | 17 |
| **LARGE** | | | | | | | |
| 75 | 3 | 2200 | 3V2200 | 11.3 x 8.6 | 22 | 11 | 25 |
| 89 | 3 | 2400 | 3V2400 | 11.3 x 9.0 | 22 | 11 | 29 |
| 104 | 3 | 2600 | 3V2600 | 11.4 x 9.4 | 22 | 11 | 35 |
| 112 | 4 | 2200 | 4V2200 | 11.3 x 8.6 | 22 | 11 | 25 |
| 121 | 3 | 2800 | 3V2800 | 11.5 x 9.8 | 22 | 11 | 40 |
| 133 | 4 | 2400 | 4V2400 | 11.3 x 9.0 | 22 | 11 | 29 |
| 160 | 4 | 2600 | 4V2600 | 11.4 x 9.4 | 22 | 11 | 35 |
| 180 | 4 | 2800 | 4V2800 | 11.5 x 9.8 | 22 | 11 | 40 |

* Rated power for duty drives

## Standardisation Approach

Common skid designs and components.
Three skid sizes cater for 80% of typical applications.
Objective: minimise upfront scheme design time.
Common civils design layouts and duplication of designs.
Procurement efficiencies.
Improved project program and reduced costs.

## Bluewater Bio Scope of Supply

GRP vessels to BS EN 13121 with media
Stainless steel pipework
Duty standby backwash pumps
Air scour blower
Form 2 local control panel with HMI
Galvanised steel skid
Off-site testing and assembly
Site installation, testing & commissioning

## Interfaces

| | |
|---|---|
| Connections | Inlet, Filtered water outlet,<br>Backwash water inlet,<br>Dirty backwash water outlet. |
| Feed pump requirements | 0 to 1.4 bar |

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