

BrightWater Environmental

Side Stream Filtration for Heating & Cooling Systems



What problems do Hydro Cyclones solve?

Corrosion: the gradual destruction of materials

Biofouling: the destructive accumulation of micro organisms

Contamination: New System deposits



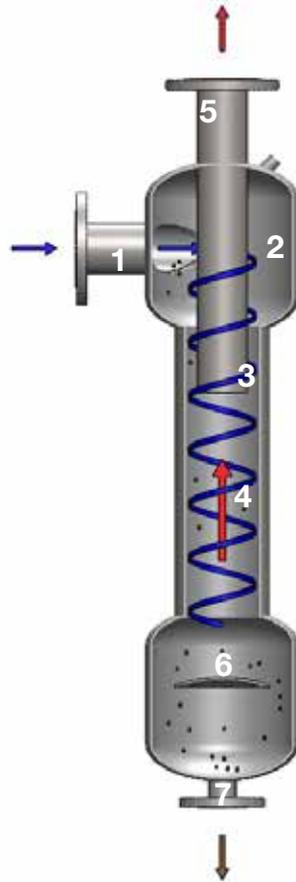
Hydro Cyclone Side Stream Filtration with Zero Water Loss from System

Brightwater Hydro Cyclone Separator

– Working Principles

A Hydro Cyclone Separator (sometimes simply referred to as Cyclone or filter) is a very effective, low cost and easy to install method of removing particles e.g. corrosion, dirt and general debris from liquids. Often fitted as part of a side stream filtration system to clean closed systems; BSRIA “strongly recommends” their use on all closed systems over 2,500 litres in size.

A Cyclone separator uses the centrifugal force and gravity to separate the particles from the liquid holding them in suspension. After the liquid enters the tangential inlet (1), the slowing velocity increases by an internal acceleration ring (2). As the liquid spins through the separation chamber (3), the centrifugal force caused by the acceleration forces the particles to move into the separation chamber (4) while the filtered liquid flows through the outlet (5). The vortex breaker (6) allows the suspended particles to move into the collection chamber (7).



Cyclones in this application is well proven with units installed in a diverse range of buildings and applications.

Hydro Cyclone side stream filtration is ideal to protect closed heating and cooling systems from the effects of corrosion, biofouling and scale build-up.

Hydro Cyclone close recovery filtration systems work without any moving parts and need the minimum of maintenance and supervision. Installation is very easy; the Brightwater unit is supplied fully “packaged” i.e. pre-plumbed with all necessary controls, pump etc. mounted on a stainless steel skid. There are no requirements for a back wash supply as needed with a media bed filter, and therefore no additional or complicated components are required e.g. water regulations back flow prevention devices and pipework etc. Without the need for a granular media bed (which would need to be replaced periodically) or for back washing, the Brightwater Hydro Cyclone unit is cost effective and environmentally friendly with no water wastage and flushing to drain.

The Hydro Cyclone after removing solids from the system use one of two options for disposing of the solids collected:

- I) The solids can then be bled down through a solenoid drain valve and then taken to waste.
- II) Where water loss is not wanted from the system then the solids can be taken from the Hydro Cyclone to a bag filter where they are retained within the bag. The water content is then taken from the bag filter and re-entered back into the water system.

For closed heating and cooling systems the Hydro Cyclone with bag filter is the ideal solution ensuring zero water usage and therefore effective filtration without diluting any of the chemicals or inhibitors present. The “filtering” effectiveness of



Features and Benefits

Fully compliant with BSRIA, CIBSE & BS EN guidelines for side-stream filtration of closed heating and cooling systems.

- Proven technology with excellent separating (filtering) performance
- Environmentally friendly – no ongoing water costs or water wastage
- Fully packaged unit; all components mounted on a stainless steel skid, ready for connection
- No moving parts – “virtually” maintenance free
- No back flow prevention device requirement
- No granular media replacement costs or cleaning
- Compliments and assists ongoing system treatment as recommended by BSRIA
- No introduction of “dissolved oxygen” into system due to Backwashing



Specification

Cyclone Filtration Closed Recovery System

A side stream water filtration system shall be fitted to the closed water systems in accordance with BSRIA standard BG29/2012.

The water filtration system shall comprise of a cyclone filter for the removal of the suspended solids, biofouling, corrosion and scale. These solids shall be collected by means of a bag filter.

To ensure no contamination of the closed water system all metallic parts in contact with the water should be manufactured in stainless steel including the cyclone filter. In addition all pipework and the skid frame shall also be manufactured in stainless steel. All parts including the bag filter, gauges, connection points etc. should be contained within the footprint of the skid for protection from damage.

The filtration system should have no moving parts with the only maintenance being to change the bag filter.

The system must be configured to ensure that no backwashing or water loss occurs during the filtration process ensuring that the systems water chemistry is maintained.

The system shall have pump protection cut-out operated via a flow switch, a bag full alarm and contacts to give a remote signal for these events.

Cyclone Filtration Closed Water Recovery System shall be from Brightwater Environmental Ltd or equal and approved subject to a technical submittal demonstrating compliance with the above criteria.

BSRIA Update – Sidestream Filtration Recommended

BSRIA has recently updated its guidance regarding pre-commissioning cleaning.

The latest standard BG29/2012 has now replaced BG29/2011. Under the section entitled “Design Considerations” BG29/2012 states that the designer should “address the requirements for system cleaning at an early stage in the design of the system”.

Moreover in the clause “Water Conservation” BSRIA recommends the use of side-stream filtration as a method of reducing water usage. Furthermore, side-stream filters are recommended to be used on all systems.

Brightwater’s Sidestream Filtration Range Data

Model	HCCRS 25	HCCRS 40	HCCRS 50	HCCRS 65	HCCRS 80	HCCRS 100
*Max. Flow (m ³ /hr)	8	18	30	45	70	110
Maximum system size (m ³)	80	180	300	450	700	1100
Electricity Supply	230/1/50	230/1/50	415/3/50	415/3/50	415/3/50	415/3/50
Pump (kW)	0.73	1.5	2.2	3.0	4.0	5.5
Full Load Current	4.1 A	6.0 A	6.6 A	6.8 A	8.6 A	10.4 A
Inlet Connection	DN25 PN16 Flange	DN40 PN16 Flange	DN50 PN16 Flange	DN65 PN16 Flange	DN80 PN16 Flange	DN100 PN16 Flange
Outlet Connection	DN25 PN16 Flange	DN40 PN16 Flange	DN50 PN16 Flange	DN65 PN16 Flange	DN80 PN16 Flange	DN100 PN16 Flange
Maximum Fluid Temperature/Pressure Ratings	95°C 10 Bar					
Length (mm)	650	750	825	850	1000	1000
Width (mm)	540	530	580	850	1000	1000
**Height (mm) including bag clearance	1100	1100	1450	1950	1950	1950
Approximate Shipping Weight (kg)	100	115	135	170	195	220
Approximate Working Weight (kg)	115	135	170	215	250	290
Alarms / BMS	No flow pump protection Bag full					

*Flow rates based at the start of the filters life
**Height includes space for changing of Bag Filters

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