

Cross Filtration Technology 'The Clever Bit'

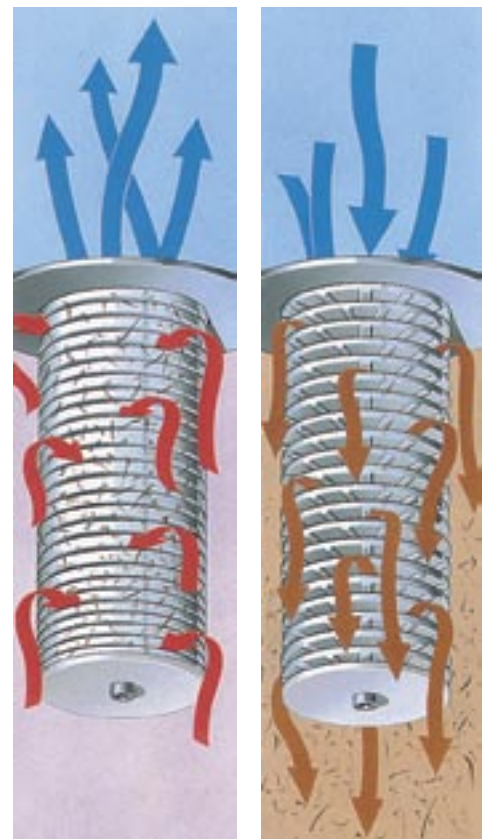
The technology at the centre of each Cross filter is a stainless steel spiral coil with raised nodes on the surface which produce a precise filtration gap. Known as the 'zero gravity' coil, the design traps any particles above the required size, which is selectable from seven interchangeable micron ratings: 12, 25, 50, 75, 125, 200 and 400.



The trapped particles are washed away quickly and thoroughly by backwashing, reversing the flow across the coil, forcing it to open slightly and completely flushing any debris out of the system. Unlike a conventional coil, the patented 'zero gravity' coil opens evenly along its length during the backwash process, resulting in complete and thorough cleaning with the minimum use of liquid.



Zero Gravity Coil



Filtering

Backwash

Faxback.....

please photocopy this page, complete the details of your enquiry and fax to 01225 834 115

Name:

Company name and address:

Email:

Telephone number:

Enquiry details:

- I have a potential application
- I am considering an on-site test
- I am interested in renting
- Other (please give brief description)

Alternatively, please email us on filters@crossmanufacturing.com
or telephone **01225 837000**

FILTERFACTS

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FILTERFACTS

Water Filtration News From Cross

Compact solution for final effluent improvement



Water companies face increasing pressure from the Environment Agency to improve the quality of final effluent from sewage treatment works in line with EU legislation. The failure to meet strict consents for the quality of effluent returned to watercourses can result in the imposition of financial penalties.

Often, final effluent quality can only be improved by the introduction of additional or tertiary treatment equipment, for which various sand filters have been traditionally used. However, all sand filters are inherently bulky and often expensive, requiring a lot of space and copious amounts of water for backwashing. This may not be a problem on the large treatment works serving towns and cities, but consent issues also affect hundreds of small sites in rural areas, where there is rarely much space available for new equipment and low flow volumes restrict the potential for backwashing. On such sites, a Cross automatic backwashing mechanical filter can provide an attractive alternative solution.

A recent application in rural Dorset is a typical example. Here, a new Environment Agency solids consent figure of 45 milligrams/litre was proving difficult to achieve under fluctuating ambient conditions. Cross Manufacturing's first suggestion was to carry out an on-site test, using their portable filtration rig. This enabled filtration samples to be taken from the final effluent using

a range of Cross filter micron ratings, which can be quickly selected by simply swapping filter coils. Subsequent laboratory analysis confirmed the most appropriate filter rating for the application – 50 microns in this case.

With this information, an automatic backwashing filter package could be designed to accurately and economically suit the maximum operating demands of the works. The 4 litres/second filter package built for this project is small enough to be housed in a corner of an existing building, although weatherproof housings can be supplied for external locations.

The Cross package draws from the site's existing effluent sump and pumps the filtered effluent directly into the watercourse. Filtered water is used for automatic backwashing, which is triggered by an adjustable differential pressure switch with set time lapse back-up. Backwashing does not interrupt forward flow through the filter and uses only minimal quantities of water. This is then re-introduced to the works' secondary treatment area. Requiring only a 12V d.c. power supply, the Cross filter can be supplied with a transformer or, in remote locations, can be battery operated, with optional solar and/or wind powered battery charging.

CROSS

Water Filters

From downpour to outfall

Tick the box if you have a requirement for (or a problem with) any of these:

- Rainwater systems
- Abstraction from river or reservoir
- Borehole abstraction
- Water quality monitoring
- Membrane pre-filtration
- Analyser pre-filtration
- GAC residual carbon filtration
- Spray nozzle protection
- Final effluent improvement

If you have ticked a box, we can help. Find out how by using the Faxback on the back cover or email:

filters@crossmanufacturing.com

or call: 01225 837000

Mobile filtration test unit is a first



We believe that this is the only fully self-contained, mobile filtration test unit available from any manufacturer of filter equipment in the UK. The Cross unit enables an on-site filtration test to be quickly achieved in any location that is accessible by a vehicle.

Even when on-site power or water pressure is not available, the unit can still run a fully functioning automatic filter test, utilising an onboard generator and pumps.

(Continued overleaf)

Mobile filtration test unit is a first

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The filtration test rig incorporates a total of four backwashing Cross 'zero gravity' filter elements, which can be supplemented with further combinations of carbon and ceramic filters for applications demanding additional filtration.

The performance of the test rig can be precisely adjusted to produce the optimum filtration effectiveness for individual applications. In many cases, successful results can be achieved in less than ten minutes. These results can then be extrapolated to suit the full size operating parameters of the application, enabling an accurate estimate of the size and cost of the final filter solution to be obtained.

Successful site tests include the inlets at water treatment plants, final effluent channels at sewage plants, boreholes, reservoirs and rivers.

The photo shows a close-up of a Cross 'zero gravity' coil during an on-site test. Trapped particles can be seen prevented from passing through the filtration gap, in this case rated at 50 microns.



Continuous operation restored at Northumbrian Water treatment plant



Northumbrian Water acceptance manager Tony Bell notes backwash counts on the two Cross Phoenix filters installed at Birch Tree.

Cross automatic water filters have helped Northumbrian Water improve filtration at a remote, unmanned water treatment plant. The plant at Birch Tree treats shallow well spring water collected from the surrounding fells at a rate of up to 1000m³/day to supply nearby communities and the town of Haltwhistle.

Membrane filtration was introduced at the plant in 2001 to protect against the threat of cryptosporidium. Fluctuating raw water quality placed a heavy workload on the inlet strainers fitted to the membranes, leading to excessive membrane backwashing and supply interruptions, often resulting in manual attendance at the site to ensure continuity of supply.

Northumbrian Water acceptance manager Tony Bell takes up the story: "Securing a dramatic improvement in inlet filtration performance – within the limited space confines of the existing building – was the vital requirement at Birch Tree. Filtration specialists John Morfield were called in and designed a compact and successful solution based on the use of Cross 'zero gravity' filtration technology. Cross Phoenix filters have been fitted behind the original strainers to permanently filter out all particles that are above 50 microns, after which cartridge filters capture any residual smaller solids before the water reaches the membranes."

Cross 'zero gravity' filter coils backwash automatically to a completely clean condition on a preset differential pressure signal with a time lapse back-up. Backwashing is performed without any interruption to the flow and therefore without any impact on the operation of the membrane systems. The efficiency of the Cross filters in removing the

offending solids has been confirmed by the extended life of the cartridge filters, which are inspected during routine maintenance schedules.

Tony Bell concludes: "The introduction of the Cross filters has improved the situation at Birch Tree, saving us the inconvenience and expense of responding to alarm signals by enabling the plant to run more effectively and economically."

Improved water



Cross 'zero gravity' filtration secures improved water

Buy or Rent?

With Cross filters you have a choice

By specifying Cross you are choosing a top quality automatic filter that can provide years of trouble-free service.

In addition to purchasing our equipment, customers can also take advantage of an alternative rental package that we believe is unique in this industry.

Renting from Cross offers a number of benefits, including:

- Preservation of your capital budget, renting can usually be allocated to a revenue cost centre.
- Financial control. Payments are fixed, normally for a minimum period of twelve months.
- Peace of mind, since the rental package includes a service contract performed by qualified Cross engineers.
- Full breakdown cover. In the unlikely event of a problem with your installation, repairs will be treated with priority to ensure that your plant is back in operation without delay.

To find out more, please complete your details on the faxback overleaf.



Water quality at Thames Water treatment plant



Cross automatic filters were installed as part of an upgrade project at the Thames Water Shalford treatment plant.

The upgrade enables water from the River Wey to be treated and used in addition to the water previously drawn from the River Tillingbourne. Existing GAC open filtration beds were converted to dual media, rapid gravity primary filters and supplemented by clarifiers and a GAC packaged absorption plant. Water leaving the new GAC filter is passed through the Cross filter to remove any residual carbon particulate which might otherwise adversely affect the final disinfectant process as well as get into the mains water distribution network.

The original specification called for a static microscreen to remove the risk of carbon in the water supply or chlorination plant, the latter being rendered potentially ineffective by the presence of carbon.

The use of a static microscreen would, however, dictate the additional cost of a duplicate system to take over in the event of a fault. The Cross System 2000 filter system is modular, consisting of individual banks of filter pods, which enables one of the banks to be taken out of service without affecting the flow through the filter. Correct sizing of the Cross filter therefore eliminated the requirement for an additional redundant system, providing considerable capital and installation cost savings.

The Cross filter installation at Shalford is rated at 125 microns and consists of four banks of five System 2000 pods, designed for a maximum flow rate of 350 litres/second. Backwashing, under dedicated PLC control, is performed by each pod sequentially, thus flow through the filter is never interrupted under normal circumstances.

Water quality at Thames Water treatment plant