

ESEP Milieutechniek BV



Variable Velocity Filtration System

. . . The Most Efficient . . .

. . . Cost Effective . . .

. . . Maintenance Free . . .

. . . Environment favourable . . .

. . . Pressure Filter in the market today

ESEP[®] Milieutechniek B.V.

Specialisten in bedrijfsafvalwater - behandelingsapparatuur

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The aim of our technical documents is to inform and advise our customers. However, the transferability of general values known from experience and laboratory results to concrete practical applications depends on a number of factors which are beyond our control. We therefore ask for your understanding that these documents cannot be used as the basis for claims in law.

VVF TECHNOLOGY

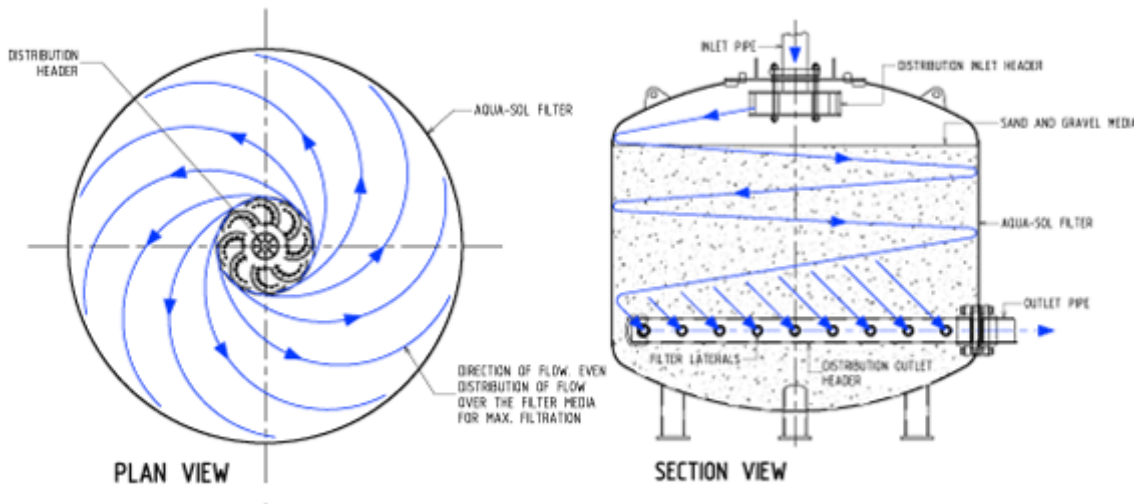
Advantages:

- Variable Filtration Velocities
- 100% Backwash Performance – without air source
- Robust Construction – Life Time Guarantee
- Reduction of BOD, COD, Iron etc.
- No G.R.P.
- 316 Stainless Steel – Fully Recyclable & Environmentally Friendly
- Removes 99.2% of Cryptosporidium – Proven by Independent Testing
- Reduced Footprint
- Less Backwash Water Consumption
- No Maintenance
- Media Range:
 - 0.1 – 0.2
 - 0.2 - 0.5
 - 0.5 – 1.0

Media filters are the most popular and efficient filtration systems for the removal of large quantities of particulate matter from water or other liquids. They can remove debris, precipitates, bacteria and silt from large volumes of water at low pressure loss. The quality of filtrate depends on a number of factors: the shape and size of the filter, the media bed depth, characteristics of the media such as granular size, density, etc. However, the most important factor for filtrate quality is the filtration velocity. Higher quality of filtrate is generally expected with lower filtration velocity. With the VVF technology however, this is not completely true as the variable velocity filters produce a very high quality filtrate at high operating filtration velocities.

The Variable Velocity Filter (VVF) Technology is manufactured to worldwide patents. The technology allows the filter to cope with fixed and with variations in liquid flow rate through a patented inlet distribution arrangement. The water on entering the top of the filter is distributed evenly in a clockwise direction tangentially to the distribution head, and this induces a rotational flow pattern upon the liquid within the filter vessel.

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The cyclonic flow pattern:

Enables the filter to deal with various flow rates, while at the same time maintaining a high quality filtrate.

Ensures an even water distribution and hydraulic balance at the liquid / filter media interface at all times.

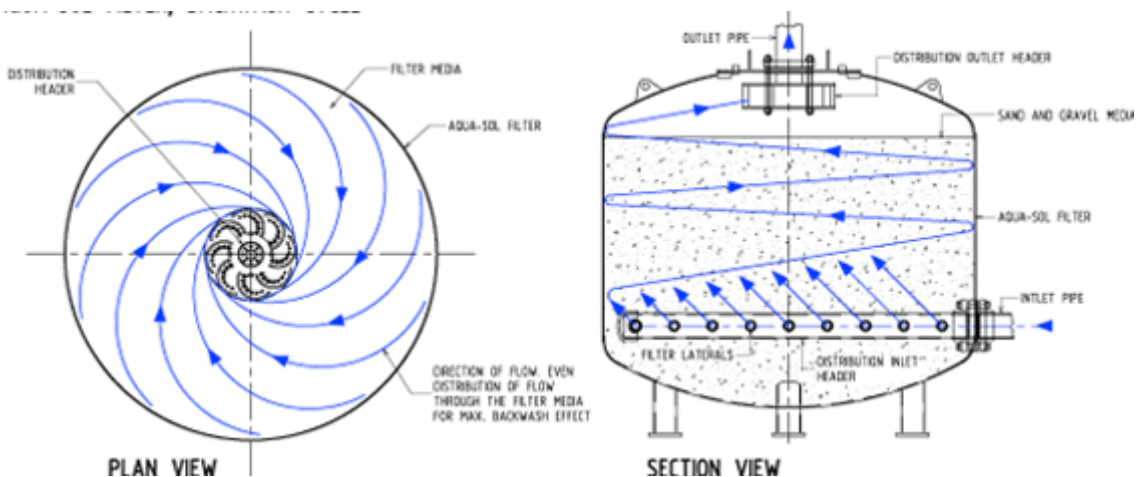
Allows the filter to accept changes in flow rate without compromising the filter bed definition i.e. channeling and tunneling is not a problem with flow rate surges.

Reduces the true linear velocity of the liquid through the filter.

Maximizes the suspension flow path and mixing within the liquid phase to aid particulate coagulation before reaching the liquid / filter media interface.

Provides the most effective conditions for the use of flocculent additives.

VVF technology enables 100% media cleaning efficiency during every backwash cycle. The backwash cycle is carried out by reversing the flow with clean water in an anti – clockwise direction from the base of the filter up through the filter bed and exiting the top of the filter. The design of the drainage / backwash laterals inside the base of the filter creates hydraulic balance in the backwash mode ensuring perfect stratification of the filter’s media and complete backwash throughout the whole filter bed. The maximum backwash flow rate to ensure complete removal of the dirt load is dependent on the density of the filter media particles. Higher density particles allow a greater maximum backwash flow rate without loss of the filter media.



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The backwash cycle efficiency:

- Results in no media replacement in most applications and therefore eliminating cost of removal, disposal and replacement.
- Ensures that bacterial colonization, bio-film and lipid build up in the filter media is prevented.
- Ensures no air scour is needed prior to the cleaning process.
- Uses less water than conventional filters.

Our VVF products have significant technical and commercial advantages over conventional media filters.

Vast product range with filters from 0.4 m in diameter up to 3.00 m in diameter. Larger filters may be made for specific applications if required.

The ability of the pressure filter to handle a variety of flow rates permits installation of smaller or a reduced number of units where larger or multiple units were used in the past, and this also reduces filter space requirements.

The entire filter is corrosion resistant giving a very lengthy product life time. The standard filter vessel is manufactured from heavy gauge certified 316L marine grade stainless steel. (Specialist coatings and linings in conjunction with carbon steel vessels can be supplied for process specific applications). All internal components are generally made from polyvinylchloride (PVC).



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A non destructible filter media in the form of silica sand is normally used, and as a result media replacement is not an issue. The filter media material and particle size can easily be changed to suit a particular filtrate specification also. Conventional filters require cartridge / membrane replacement over time and use.

An excellent quality of filtrate is produced. The filters can remove suspended solids down to 1 µm in size with standard sand particles (0.2 – 0.5 mm), significantly reduce biochemical oxygen demand (BOD), colour, chemical content and faecal coli-form bacteria. The entrapment of chlorine resistant pathogens such as cryptosporidium is a major plus.

The filters excellent efficiency is maintained through hydraulic balance and 100 % filter media cleaning in the backwash cycle. Hydraulic balance at the water / filter media interface during filtration operation and backwash mode ensures total integrity of the filter bed is maintained at all times.

The backwash cycle disrupts and removes bacteria build-up in the media.

Low maintenance costs involved with VVF products.

The products are totally environmentally friendly.

There are a vast number of VVF product applications ranging from swimming pools, fish farms, aquariums, potable water, storm water, waste-water (preliminary and polishing treatment), dairy, chemical, pharmaceutical, paper, offshore oil/gas and desalination industries (pre-treatment for reverse osmosis (RO) systems).

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PROJECTS USING VVF Technology

Poolcourt Ltd. have installed over 140 VVF Vessels in the Leisure Industry from large domestic pools, commercial leisure centers & local authority pools up to 50m in size. It is their number 1 choice of filtration system due to the superior performance over other conventional filters.

Industrial

Merlin Car Auction (carwash reclamation) Co. Dublin
Tougher Oil Carwash System Co. Kildare
Donnelley's Fruit & Veg (waste water processing) Co. Dublin

Oil & Gas

The Weir Group (Great Plutonio Project) #1 Off Shore Angola
The Weir Group (Great Plutonio Project) #2 Off Shore

Industrial Printing Industry

Roto Smeets Weert B.V. Offset Web Printing Holland

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