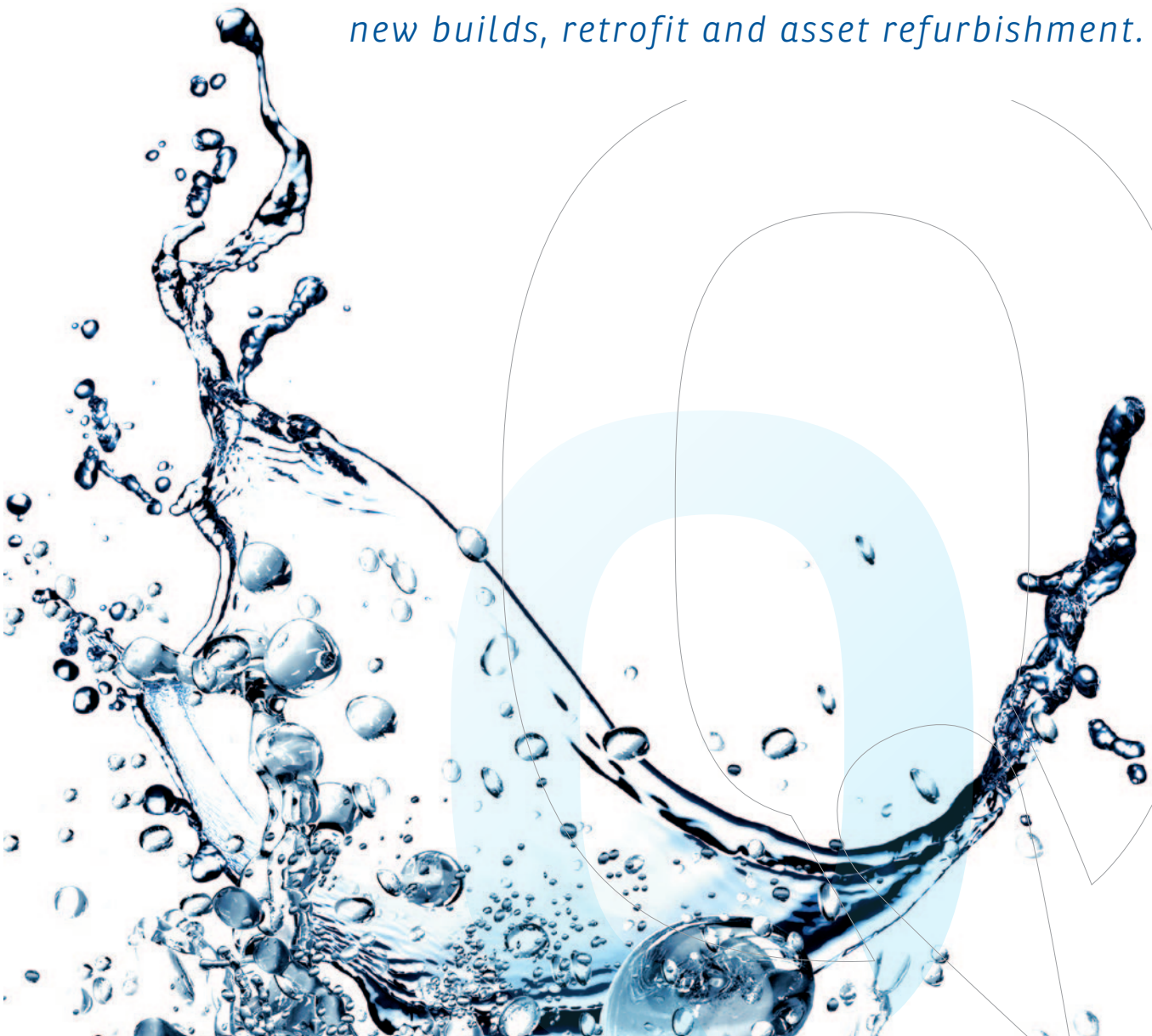




# ELIQUO | HYDROK

## Wastewater Treatment

*Highly efficient systems and technology for,  
new builds, retrofit and asset refurbishment.*



# Wastewater Treatment Technologies

ELIQUO HYDROK OFFER A COMPREHENSIVE RANGE OF WASTEWATER TREATMENT EQUIPMENT. FROM THE INITIAL DESIGN, ON TO THE MANUFACTURE, DELIVERY, INSTALLATION AND COMMISSIONING; ALL ASPECTS OF THE CONTRACT ARE MANAGED AND DELIVERED IN-HOUSE.

THIS ENSURES TOTAL COMMITMENT AND CONTROL AT EVERY STAGE OF A PROJECT, PROVIDING INNOVATIVE WATER ENGINEERING SOLUTIONS AND REDUCED ENERGY SOLUTIONS THAT DELIVER AN EXTREMELY HIGH EFFICIENCY WITH REDUCED POWER CONSUMPTION.

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## AERATION

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### ULTRA-FINE BUBBLE DIFFUSERS

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At the root of each Eliquo Hydrok solution is an Aquaconsult AEROSTRIP® diffuser. This range of ultra fine bubble diffusers transfer oxygen to effluent more effectively than any other type. This efficiency allows the designers at Eliquo Hydrok to reduce blower sizes, reduce air main diameters, and make savings on valves and other hardware. Energy efficiencies in the range are 40% over existing systems being provided. By adopting the Eliquo Hydrok solution, immediate cost savings can be gained, or perhaps more significantly, existing plants can be upgraded - with the increased efficiency the capacity of an existing plant can be increased, sometimes eliminating the need for costly civil structures or new sites.

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### HOW IT WORKS

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The operational life of an Aquaconsult diffuser is typically in the range of 14-20 years, and with the unique way in which the membranes self- clean, whole life costs are reduced, and man entry into tanks for maintenance purposes is avoided.

The increased efficiency of the Aquaconsult AEROSTRIP® diffuser is due to the very fine bubble that is generated - this presents a greater surface area for any given volume of air to the flow compared to any other system. However, increased efficiency is also provided due to the general arrangement of the diffusers and the fact that they are secured directly to the tank floor; this increases contact time, and the curtain effect of the bubble pattern avoids dead areas.



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## IFAS

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### ENHANCED BIOMASS FIXED BED SYSTEM

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The Eliquo Hydrok IFAS (Integrated Fixed-Film Activated Sludge) system has been developed utilising the Biotextil Cleartec media for which Eliquo Hydrok are the appointed sole UK distributor. When used in conjunction with the Aquaconsult AEROSTRIP® diffusers this system offers even further efficiencies within the treatment process. Biotextil Cleartec is a textile product made of 100% polypropylene which by the nature of its construction creates a large specific surface area on which biomass can grow. The construction of the material permits good oxygen supply and prevents excessive growth of thick layers of biomass thus maintaining the optimum efficiency of the process.

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### HOW IT WORKS

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The Biotextil Cleartec curtains are positioned directly above the diffusers, housed in a removable frame, set parallel to the flow. The configuration of the material allows for flexibility and movement within the flow of the tank, leading to an enhanced performance, this in turn increases the capacity of the wastewater treatment plant.

To maximise the volume capacity of the treatment tank, diffusers should be as close to the base as possible with the Biotextil Cleartec curtains positioned ideally between 40cm and 60cm above the diffusers. The best possible scenario is the combination of the low profile ultra-fine bubble diffusers and the Biotextil Cleartec media.

The curtains are set to allow the flow to pass between them horizontally, with the diffusers creating a vertical flow. As a result, the curtains are in constant motion and if thicker active sludge layers should attempt to settle on the material these are shaken off and removed as a result of the movement. This 'shedding' process prevents blockages and maintains optimum efficiencies and minimum energy requirements.

Eliquo Hydrok are able to construct a bespoke cage system which incorporates both elements, this allows them to be lifted for routine maintenance without interfering with the operational activity of the plant.



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## TERTIARY FILTRATION

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### PILE CLOTH MEDIA FILTRATION

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Eliquo Hydrok have the UK distribution for the Mecana Pile Cloth Filter Media within their portfolio of Wastewater Treatment Processes.

Swiss Company Mecana has over 45 years' experience in the development of tertiary filtration systems using the patented Optifiber® material, with hundreds of reference sites across Europe and in the United States.

The Mecana range of Pile Cloth Media Filters are available to treat flows ranging from 3 l/sec to 250 l/sec within stainless steel tank units. Largest flow being 9,250 l/sec to-date, built within concrete tank structures.

All units are produced to Swiss quality standards in Mecana's factory in Switzerland, with the stainless steel tanks and control systems manufactured in the UK by Eliquo Hydrok. The Mecana Pile Cloth Media Filter offers a superior operational performance to that of any micro-screen or micro-strainer in the market today as it is a true filter with depth filtration being the dominant particle removal mechanism.

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## APPLICATIONS

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- Tertiary Filtration for TSS reduction downstream of humus or secondary settlement tanks (<5mg/l TSS achievable)
- Tertiary phosphorus removal in combination with precipitation/flocculation - bespoke design for P<sub>tot</sub> consent from 1mg/l to less than 0.1mg/l
- Micro-pollutant 'Priority Substance' removal
- As an alternative to fixed film biological treatment humus tanks for removal of TSS
- Pre-filtration for fixed bed nitrification stages
- Storm Overflow filtration

#### Filter Media

- Grade of Optifiber® cloth varies to meet the treatment process requirement.
- White Optifiber® (Standard) has 25microns diameter fibres.
- Blue Optifiber® (Microfibre) has 7microns diameter fibres.
- Both are suitable for a variety of applications including TSS, BOD and P removal but with standard cloth (white) generally being suitable for consents down to 10mg/l TSS and / or 0.5mg/l P<sub>tot</sub>.
- Microfiber (Blue) being suitable for <5mg/l TSS and <0.1mg/l P<sub>tot</sub>.



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## DIFFUSER LIFTOUT GRIDS

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### REMOVABLE SYSTEM FOR DIFFUSERS

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The Eliquo Hydrok Liftout Diffuser Grids are specifically designed to allow the operator to remove and maintain the Aquaconsult AEROSTRIP® diffusers without the costly need to drain the aeration tank.

The Diffuser Liftout grids are advantageous to sites that have one, two or three tanks as it allows the operational capacity of the plant to be completely maintained whilst the liftout grids are being removed.

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### HOW THEY WORK

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In most circumstances, the Eliquo Hydrok unique guiderail system allows the liftout grids to be installed and commissioned without the need to drain the tanks. The liftout grids are particularly suitable for retrofit applications as all the necessary installation work can be completed externally with the liftout grids lowered into place, brought online and commissioned.

For optimum site performance and plant flexibility, the Eliquo Hydrok Liftout Diffuser Grids can be designed to also incorporate the Biotextil Cleartec® biomass fixed bed system within the frame (IFAS).

There is also a range of liftout grids that can be hired out on short or long term. These are generally used on sites that have temporary or emergency aeration requirements.

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### HIRE THE HYER DIFFUSER LIFTOUT GRIDS

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The Eliquo Hydrok HyER Liftout Diffuser Grids are specifically designed for rental to help in emergency situations where an existing plant problem requires a rapid aeration solution. This could be in the form of operational overload during seasonal peak periods, during planned maintenance activities or where extended plant capacity is needed.



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## HY-SAF

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### PACKAGE BIOLOGICAL TREATMENT PLANT

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The Eliquo Hydrok Hybrid Submerged Aerated Filter (HY-SAF) offers a power efficient, robust, small footprint biological wastewater treatment solution individually designed to achieve the final effluent consent standard required.

HY-SAF package treatment works are suitable for treating municipal wastewater for 100-3,000 PE (Population Equivalent) and industrial effluents - offering a complete turnkey package. It incorporates the Eliquo Hydrok IFAS (Integrated Fixed-Film Activated Sludge) technology of high efficient fine bubble diffusers combined with fixed bed media curtains.

With no moving parts in the main tank, the HY-SAF is simple to operate and low in maintenance. In order to minimise power costs, we incorporate control software linked to a highly efficient motor control centre, this ensures effective and accurate blower/air control delivery whilst maintaining the most efficient treatment process conditions.

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### APPLICATIONS

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- Permanent wastewater treatment plants
- Mobile emergency response treatment units
- Temporary treatment during planned maintenance
- To supplement biologically overloaded works
- Green Leachate treatment
- Industrial waste treatment

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### HIRE THE HY-SAF

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The standard HY-SAF stainless steel tank measures nominally 3m x 4m, offering a hire solution for up to 300 PE (population equivalent), additional units can be combined to increase the overall potential capacity.



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## MICRODYN-NADIR MBR

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### BIO-CEL MEMBRANE BIOREACTOR PROCESS

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The MBR process is a combination of a classic activated sludge biological treatment system operating at high mixed liquor solids levels coupled with membrane filtration. The membrane filtration system, using the unique Microdyn-Nadir BIO-CEL modules removes the need for final settlement tanks, as the ultrafiltration membrane acts as a barrier to the sludge and solid particles, allowing mainly clean water to pass through.

The result is a very compact system, making it an ideal solution where space is limited. MBR's are also capable of producing a very high quality treatment, making them ideal for water reuse applications typically as low as:

- Biochemical Oxygen Demand (BOD) <5mg/L
- Total Suspended Solids (SS) <0.5mg/L
- Ammonia Nitrogen (NH<sub>3</sub>N) <0.5mg/L
- Faecal Coliforms <10 CFU/100ml

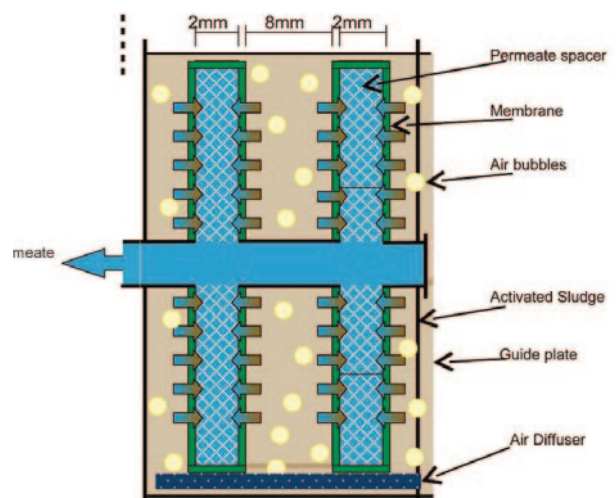
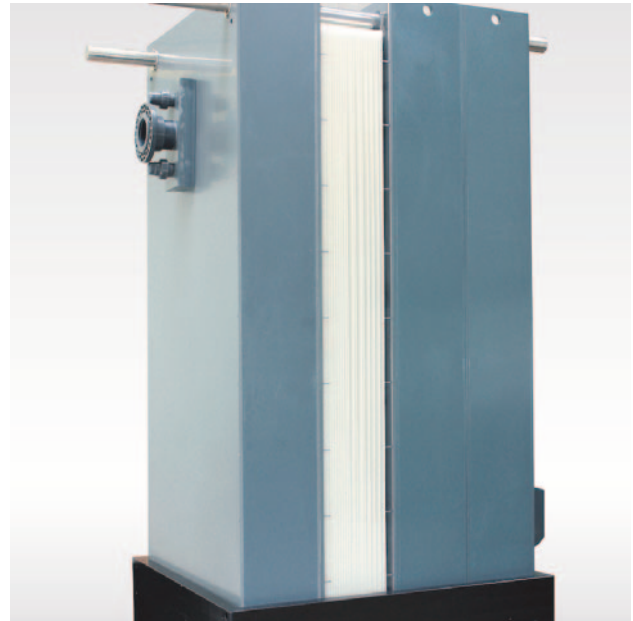
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### HOW THEY WORK

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The Eliquo Hydrok/Microdyn-Nadir Membrane Bioreactors operate at far higher mixed liquor suspended solids (MLSS) concentrations than conventional activated sludge systems, typically between 8,000 to 10,000 mg/L. The elevated biomass concentration provides very effective removal of both soluble and particulate biodegradable materials at higher loading rates. The resulting increased sludge retention times ensures complete nitrification even in extremely cold weather.

The BIO-CEL Modules are immersed in the aeration tank, and are in direct contact with the mixed liquor. A vacuum is applied to the modules by means of a permeate pump, which allows the treated water to pass through the membranes, and then onto a final effluent discharge point..





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