

Membracon

Clean Water Solutions

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MEMBRACON (UK) LTD was established in 2002 to supply the Finishing industry with membrane technology.

MEMBRACON engineers offer more than 60 years of combined experience in process filtration.

MEMBRACON co-operates closely with a group of international partner companies in Europe, USA and Japan. MEMBRACON have local agents and distributors in Europe and the Rest of the World, enabling us to offer local customer support whenever needed.

In 2005 our revolutionary and exclusive FLEXOPERM[®] modular UF system was introduced, based on long-proven spiral wound technology but adapted to make the operation much simpler and more flexible for the user.

MEMBRACON continues to grow and in 2014 we introduced UV bacteria prevention systems to our product portfolio to add to our already successful range of water treatment units.

These water treatment systems are used worldwide within numerous sectors of industry and can be applied in various areas to treat all types of process water.

MEMBRACON design, install and commission:

- Reverse Osmosis (RO) systems 25 to 900 litres/minute to produce high quality RO water from municipal or private supplies.
- Process Filtration Systems.
- New Ultrafiltration (UF) systems from 50 to 20,000LPH
- Membrane Bio Reactor Systems (MBR)
- Effluent Treatment Systems
- Ultra Violet Systems for bacteria removal
- Degreasing Bath Regeneration – Oil Separation Units.

We also supply:

- A wide range of membrane spares including UF, RO, NF and ceramic types.
- Pre-filtration bags and cartridges with single or multiple housings.
- Process filtration – pleated, carbon, high surface area pleated (HFE), spun bonded and wound filter cartridges and disposable needle-felt filter bags.
- Pipe work systems including spray systems.
- Carry out on-site surveys, inspections, plant modifications, training, installation, commissioning and more...

Suppliers and designers to Automotive, Aerospace, Defence and other sectors of Industry.

Reverse Osmosis Plants

Designed, built and installed to customers requirements. Removes contaminants from municipal and private water supplies. 250 to 5000 LPH.



5000lph system with free standing auto water softener & auto activated carbon filter

Main components

- Pre-filter cartridge(s)
- UV sterilisation system
- High pressure vertical RO pump
- RO housings (material FRP/StSt, 4" or 8")
- RO membranes
- Flow meters for permeate and concentrate
- Flow indicators
- Pressure gauges
- Interconnecting pipework
- Panel with PLC controller, conductivity monitor, schematic with status lights.

Options:

- CIP flushing
- Raw water booster pump
- Water softener/ Anti-scale dosing
- Activated carbon filter
- Dechlorination dosing system



1000lph skid mounted system with water softener

A water analysis will be required to confirm and finalise our design

Ceramic Membrane Water Treatment Units

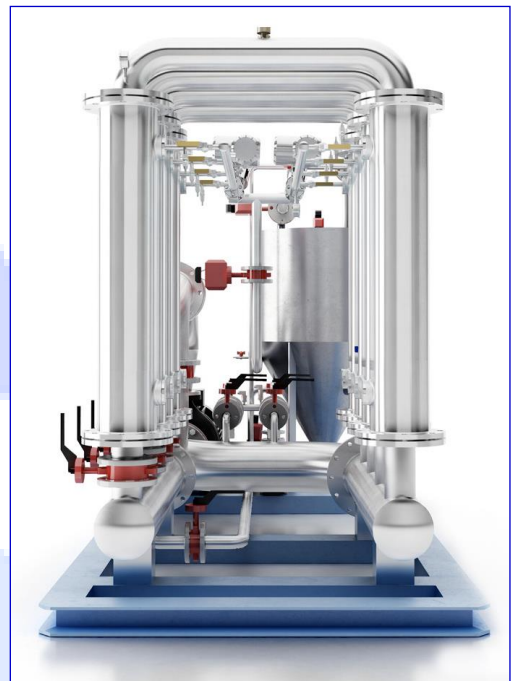
Membracon not only offers a full, bespoke, design & build for the system to suit each customer's requirements, but can also provide a comprehensive service & maintenance package along with a tailored financing solution.

The Membracon ceramic filtration systems have been designed to assist for Membrane Bio Reactor (MBR) systems, up to 2,000m³/day, that treat industrial waste water recycling, effluent plants and desalination systems in a multitude of industries; petrochemical, chemical, food & beverage and pharmaceutical.

The benefits of the use of these filtration systems include; a reduction in operational expenditure (OpEx), smaller footprint, minimal operation & maintenance requirements, all aiding in a reduction of disposal costs via reuse.

A Membrane Bio Reactor (MBR) is a biological waste water treatment process, coupled to a membrane filtration system. The elimination of organic matter, nitrogen and phosphorus is performed through the assimilation by the micro-organisms inside the reactor, while in the membrane an effective separation between the solids (biomass) and the liquid fraction is carried out. As a result, a high quality effluent is produced, free of suspended solids and turbidity and partially disinfected.

MBR systems are characterised by the high quality of the treated water, which fits the requirements for reuse in many cases. Furthermore, the existence of a physical barrier as the membrane, avoids the escape of solids from the biological reactor and the wash out of the biomass. As a result, the efficiency of the process is increased due to the higher biomass concentrations and the footprint is reduced significantly.



MBR filtration systems can be placed inside the bioreactor, in submerged configuration, which allows reducing part of the energetic consumption associated to the filtration.

Ceramic Membrane Water Treatment Units

However, the more extended option in industrial waste waters and small / medium size installations is the external configuration. When the membranes are placed outside the reactor, the operation and maintenance is simplified, and the MBR system can be operated with higher flows in a more stable operation, higher biomass concentration and considerably lower bioreactor volumes. In consequence, we more compact, robust and easy to operate installations can be obtained.



The potential of Membracon ceramic filtration systems, is highlighted when dealing with high-loaded waste water, industrial waters and small / medium flows.

UV Bacteria Prevention

The UV Technology ECL series provides the very latest in medium pressure UV lamp technology and in-line UV chamber design. Offering increased treatment capacity and flexibility for the environmentally friendly process of disinfection, the ECL series provides solutions for a range of applications.

These include: industrial process water, drinking water, food and beverages and aquatics.

- Features both single lamp and multi-lamp configurations
- Uses a range of medium pressure UV lamps.
- The specially designed UV reactors provide optimum flow distribution and hydraulic performance.
- Can be designed to offer a solution for many water treatment applications.
- 1.0m³/hr – 5000m³/hr



THE IN-LINE UV CHAMBER DESIGN OPTIMISES FLOW HYDRAULICS, PROVIDING A 20% IMPROVEMENT IN PERFORMANCE



IN-LINE MEDIUM PRESSURE UV SYSTEMS



THE ULTRA COMPACT CHAMBER DESIGN CAN BE INSTALLED DIRECTLY INTO THE PIPE EITHER VERTICALLY OR HORIZONTALLY, PROVIDING SUPERIOR FLEXIBILITY



UV System	ECL-110-4	ECL-210-4	ECL-113-5	ECL-115-6	ECL-215-6	ECL-220-8	ECL-225-10	ECL-230-12	ECL-430-12
Performance									
3rd Party Validation	USEPA Ultraviolet Disinfection Guidance Manual (UVDGM) 2006								
Validated unit*	N/A	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Yes
Certification	NIPH / FHI Water Report 120 / CE Marked / UL Approved / NSF-50*								
UV dose range	10 mJ/cm ² to 120 mJ/cm ² . RED (Reduction Equivalent Dose)								
UV lamps and monitoring									
Lamp power	1.0 kW	1.0 kW	1.3kW	1.5 kW	1.5 kW	2.0 kW	2.5 kW	3.0 kW	3.0 kW
Lamp number	1	2	1	1	2	2	2	2	4
Lamp life	9,000 hours								
Lamp design	Medium pressure								
Standard UV monitoring	AT-463 - 4-20 mA - IP66								
Validated UV monitoring	Validated ONORM UV monitor - AT-900 (calibrated) - IP66 (each lamp monitored)								
Variable power	100% power to 50% power (variable automatic dose pacing)								
UV Chamber									
Connection size (mm)	DN100	DN100	DN125	DN150	DN150	DN200	DN250	DN300	DN300
Connection type	BS4504 PN10 RF Flange								
Design pressure	10 Barg design (15 Barg test)								
Material construction	316L stainless steel								
Internal / external finish	0.8 µm Ra internal / 1.6 µm Ra external								
Lamp and wiper access	Dual sided access								
Quartz type	High purity quartz sleeves								
Mounting	N/A	Legs	N/A	N/A	Legs	Legs	Legs	Legs	Legs
Wiper system	Manual wiper system (optional) / Automatic wiper system (optional)								
Temperature probe	AT-487 (PT-100) - IP66								
Vent & drain ports	Yes								
Ingress protection	IP66								
Installation	Vertical or horizontal								
Chamber options	0.4 µm Ra internal polish upgrade / electropolish upgrade / super duplex 25% chrome steel / connection types								
Technical									
Communication options	Ethernet / Modbus / Data Stream / ICSS Integration (other fieldbus options available)								
Lamp power supply	Choke	Choke	Choke	Choke	Choke	Choke	Choke	Choke	Choke
Power consumption	1,100 W	2,200 W	1,430 W	1,650 W	3,300 W	4,400 W	5,500 W	6,600 W	13,200 W
Mains power	230 V (210 V to 240 V options)				400 V (380 V to 480 V options)				
Power phase + neutral	1 Ph + N				3 Ph + N				
Frequency	50 Hz or 60 Hz								



ECL RANGE - MEDIUM PRESSURE UV

UV Systems for E-Coli & Bacteria Prevention

Chemical Free Disinfection with UV Light

UV light is a chemical free method of ensuring that organisms, which are airborne or present in most fluids, are unable to replicate and thus remain inert.

There are two types of UV lamps, Low Pressure lamps producing monochromatic light at 254nm and Medium Pressure lamps producing polychromatic light between 200 and 300 nm.

The advantages of UV disinfection over other methods of disinfection:-

- Chemical free & environmentally friendly
- Does not affect the taste, colour, or pH
- More cost effective than Ozone disinfection
- Effective against all known bacteria, moulds, spores & viruses



UV Disinfection for Industrial Applications

Water is used at some point in almost every manufacturing process worldwide. In many industrial water applications, the use of chemicals such as chlorine or biocides is restricted for process reasons. UV provides a highly effective, chemical free disinfection solution for a vast range of applications.

Treatment with the appropriate dose of UV energy will inactivate all types of micro-organisms. A UV dose greater than a log-4 reduction (99.99%) can be easily achieved. With a wide range of Ultraviolet systems, Membracon UK can provide treatment for any application.

Ultraviolet disinfection is ideally suited for the following industrial applications: -

AIR CONDITIONING

Membracon systems treat condensate cooling water, a prime source of bacteria growth in air conditioning applications. Ideally suited for this application, UV is an effective barrier against viruses, bacteria and parasitic micro-organisms.

COOLING & HEATING

Micro-organisms, such as Legionella, can thrive in cooling/heating systems. Evaporated water and spray can carry harmful micro-organisms to populated areas, posing a significant threat to public health. UV provides an effective non-chemical solution.

WATER FEATURES

UV Systems effectively protect against harmful micro-organisms such as Legionella, which present a significant danger in water feature applications e.g. fountains, where wind can carry infected atomised water across great distances.

ICE MAKERS & VENDING

All ice makers and post mix venders in commercial establishments are connected to a water supply. A Membracon low pressure UV unit will ensure that the water is free of harmful micro-organisms and bacteria.

DRINKING WATER

UV disinfection provides excellent protection for drinking water applications. By installing a Membracon system immediately before the outlet, potable water supplies are protected against harmful micro-organisms, bacteria and viruses.

***“OUR LEADING UV
DISINFECTION
SYSTEMS OFFER
SIMPLE SOLUTIONS
FOR A RANGE OF
COMPLEX
APPLICATIONS IN A
RANGE OF
INDUSTRIES”***

WATER SUPPLIES

To avoid water supplies, including drinking, washing and showering facilities becoming infected with harmful micro-organisms, such as Legionella, our UV systems effectively disinfect both hot and cold water supplies thereby safeguarding public health.

SWIMMING POOLS

From small spas, hydro-pools and splash pads to large municipal swimming pools and water parks, Membracon systems protect against chlorine resistant micro-organisms, such as Cryptosporidium, and provide crystal clear water and fresh clean air.

Bench Scale Ceramic Membrane

A Tangential Flow Filtration (TFF) system for Food, Dairy, Pharmaceutical and Biotech Industries using innovative Ceramic Membranes (NF-UF-MF) and a low-shear Quattroflow pump.

Suitable for abrasive, particle laden and high viscosity solutions, typical uses:

- Membrane selection
- Process development
- Process – CIP optimisation
- Small scale production

Fully inert, steam sterilisable ceramic membranes made of AZT or TiO₂



Version 1



Quattroflow 1000/1200 S



Quattroflow 4000 S



Version 2

The systems are compact TFF filtration system for use of Tami ceramic membranes. There are two system versions available:

Version1: for laboratory size 10mm Dia membranes (area 0.02 – 0.1 m²) in combination with the Quattroflow 1000/1200 S pump.

Version2: for industrial size 25mm Dia membranes (area 0.1 – 0.5 m²) in combination with the Quattroflow 4000 S pump.

Compatible with all membrane ranges of 250mm and 600mm x 10mm Dia and 580mm, 1020mm or 1200mm x 25mm Dia.

System Overview

The manual TFF systems are unique and flexible multi-purpose systems designed for ultrafiltration and microfiltration process development, membrane selection and scale-up.

The solution to be processed is introduced into the housing through the Quattroflow pump with variable speed control, which ensures the optimum velocity at the membrane surface. At the housing exit a sanitary diaphragm valve is used to adjust the backpressure. In this way to optimal ΔP and TMP can be determined and adjusted manually.

The selected membrane (see table below) is placed inside the housing. Feed inlet and outlet tri-clamp connections located in the recirculation loop allow connection to a customer supplied tank or glass bottle. A tube in tube heat exchanger for cooling or heating is available as an option.

System Features

- Very mild pumping for shear sensitive biological molecules
- Pressures up to 6 bar with almost no pulsation
- No rotating parts, no mechanical seals, no leakages
- Minimum energy input, almost no product temperature increase

Membrane Features

- Fully inert, straight-through flow path
- Chemical compatible from pH0 to pH14
- Solvent resistant
- Temperature up to 130°C
- Hot water or steam sterilisation possible
- Long lifetime, burst pressure >90 bar

Typical applications:

Food & Dairy

- Milk/whey bacteria removal
- Casein/whey protein separation
- Fat/protein separation from whey
- Milk standardisation
- Apple juice/glucose syrup clarification
- Gelatine concentration

Biotech




- Concentration & Diafiltration
- Desalting & buffer exchange
- Cell harvesting/clarification
- Virus harvesting/clarification
- Extraction/filtration of organic and amino acids




Water Treatment

- Depyrogenation
- Production of high purity water
- Treatment of process and waste water

Other

- Recycling of acid and caustic solutions
- Beer filtration

Membrane geometries			
Ø 10mm membranes in AZT or TiO ₂			
length	area (m ²)	area (m ²)	area (m ²)
			
	Filtanium	Inside CéRAM Filtanium	Filtanium
250 mm	0.005	0.009	0.013
600 mm	0.011	0.022	0.032

Membrane geometries			
Ø 25mm membranes in AZT or TiO ₂			
Length	area (m ²)	area (m ²)	area (m ²)
			
580 mm	0.1	0.175	0.25
1020 mm	0,17	0,3	0,43
1200 mm	0,2	0,35	0,5

Cut-off table		
UF fine (NF)	UF	MFT
1 KD	15 KD	0,14 µm
3 KD	50 KD	0,20 µm
5 KD	150 KD	0,45 µm
8 KD	300 KD	0,80 µm
		1,40 µm

Cut-off table		
UF fine (NF)	UF	MFT
1 KD	10 KD	0,14 µm
5 KD	50 KD	0,20 µm
	100 KD	0,45 µm
	300 KD	0,80 µm
		1,40 µm

For further information, specifications and prices, please contact:

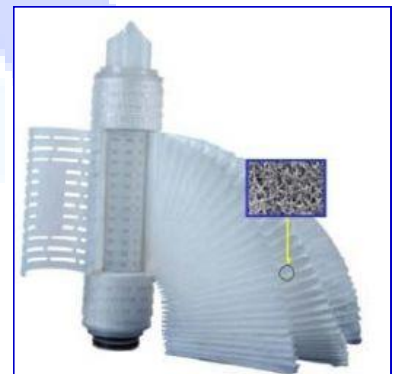
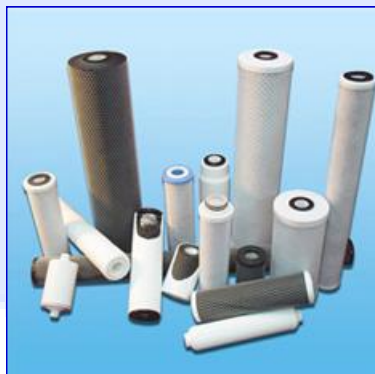
Process Filtration Equipment & Media

MEMBRACON offers a full range of process filtration equipment comprising stainless steel filter housings and filter media. For filter housings we offer a choice of materials from 304 stainless steel to 316 & plastic. Our equipment can be customised to take any flow rate, from single cartridge housings to large multi round high flow housings.

Our media selection is vast, from a selection of cartridge filters such as melt blown, pleated and membranes to more sophisticated technology such as our Memcharge N66 positively charged membrane, designed to remove endotoxins and pyrogens. If you have a filtration issue, we will be happy to solve it.

Typically we service but are not restricted to some of the following industries:

Food & Beverage, Power, Cosmetics, Pharmaceutical, Water Treatment, Aerospace, Automotive, Ink Production and many more.....



FLEXOPERM[®] Modular UF System COMPACT – EASY – FLEXIBLE – ECONOMIC

MEMBRACON's revolutionary arrangement of the housing and pipework makes the FLEXOPERM[®] UF-system more compact than any other UF system. It's more convenient for the operator, membrane element replacement is much easier, the element is easily lifted off at a convenient height so reducing headroom or the need for a hoist.



“Clean in place” systems (available as an extra) allow routine maintenance procedures to be carried out during normal production hours.

Membracon offer a complete spares, replacement and maintenance service.

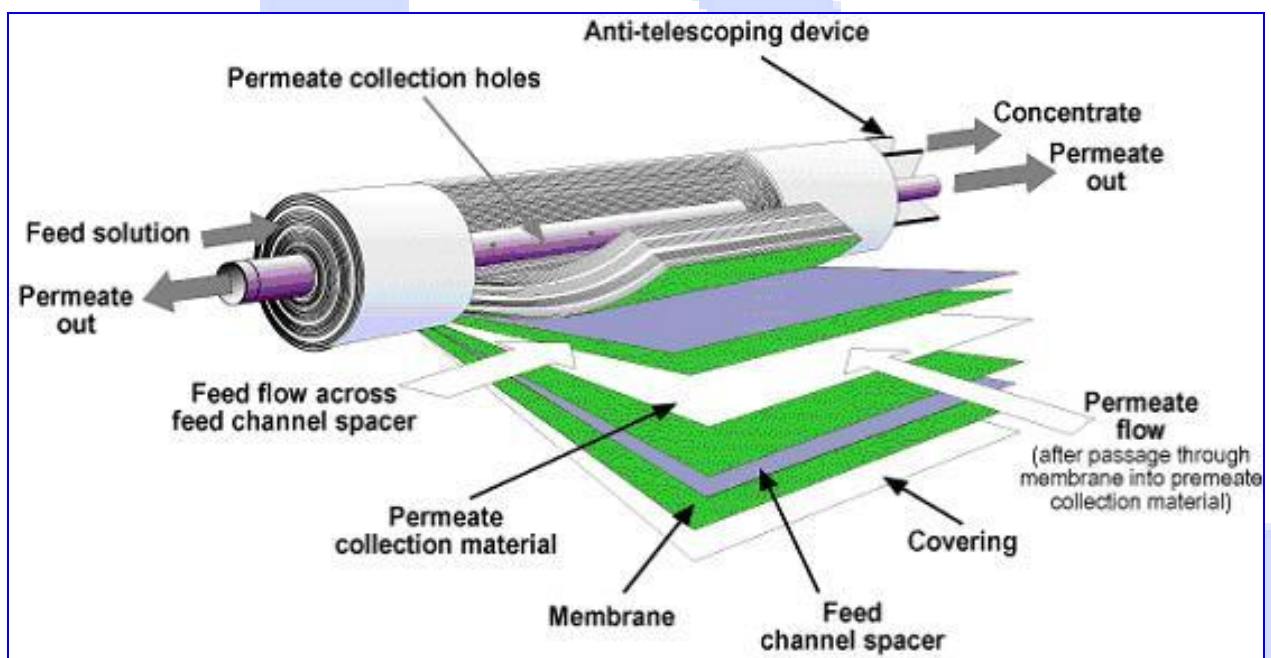


Elements

MEMBRACON elements are ideal for most concentration or clarification applications, their construction suits a broad range of chemical, temperature and pressure applications. The spiral design allows higher membrane areas within a given envelope than other current arrangements. They are energy efficient, compact and economical to install, allowing maximum operating flexibility for most filtration processes.

MEMBRACON spiral wound elements and housings in 1.8", 2.5", 4", 6" and 8" dia.

Product No	Dia (mm)	Length (mm)	Remarks
4000005	185	1016	
4000006	190	838	Competition retrofit
4000009	199	1016	Competition retrofit
4000014	138	1016	
4000021	95	838	
4000020	95	1016	





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Customers Using Membracon Products



Volvo Belgium



Honda UK



Daimler Benz Bremen



Ford Australia



Mitsubishi Australia



Volga Russia



Mazda Japan



Chrysler USA



General Motors USA



Volkswagen Sweden



Jay Bharat Maruti Ltd (India)



Seat Spain



JCB UK



Jaguar UK



GKN UK



BMW UK



Suzuki Hungary



Benteler UK



Nissan UK



Toyota UK



Renault Czechoslovakia



ThyssenKrupp UK

Service Agreements, Surveys & Training

At **MEMBRACON UK** we offer a full range of paint finishing plant surveys and health checks. These can be incorporated in to a Service Agreement for a duration of up to 5 years with a minimum term of 12 months.

Training can also be provided to improve efficiency and knowledge of current Plant equipment that is currently installed on site.

Maintenance & Call out Service

Our back-up support includes a team of factory trained service engineers who have many years experience in the service and maintenance of E-Coat, Wet and Powder Coating equipment. We only use genuine manufacturer spares and by regular servicing can ensure:

- **Highest operating efficiency of equipment.**
- **Better flow rates through RO & UF membranes.**
- **Optimum Speed of Work.**
- **Lowest down time.**
- **Safe operation.**

We also offer the following services:

- **Health Checks of existing plant equipment.**
- **Scheduled Maintenance on paint finishing systems.**
- **Planned preventative maintenance contracts & service agreements.**
- **Emergency plant breakdown assistance**
- **Anode inspections.**
- **Spark Testing of E-Coat Paint tanks.**

All service agreements and health checks come complete with a report of our findings by our trained service engineer. Each report will highlight what was checked and will have comprehensive solutions to enable your plant to run more efficiently and be more cost effective.

Hire Purchase Scheme for Capital Equipment

At MEMBRACON, our aim is to assist our clients with purchasing new equipment for start up projects or to replace what is currently installed. These can be designed for individual requirements.

Our latest solution is the offer of financing your equipment through our Hire Purchase scheme. This can be used if the client does not have the initial set up costs required. This is offered for the purchase of capital equipment and enables the client to spread the cost across an agreed period of time. We can offer anywhere between 12 and 36 monthly terms.



EXAMPLES OF CAPITAL EQUIPMENT

Examples of Membracon Products



150 lph RO Unit



UV Bacterial Prevention System Installed on-site



UV Bacterial Prevention Control Panels



**8" UF Rig Including Clean In Place System (CIP).
 10,000 ltr/hr Permeate For Automotive & Aerospace Industry**

