

# Membracon

Specialists in plant and equipment for finishing

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**We Also Do:** Gas Burner services (GasSafe engineers)  
 Rectifier services  
 Commissioning  
 Spares.....

**Contact us for more information.**



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**MEMBRACON (UK) LTD** was established in 2002 to supply the electropainting industry with membrane technology. Our parent company, MEMBRACON FILTRATION B.V. in the Netherlands, was established in 1997 by Mr. Jan Tump. Prior to this, Jan Tump for many years was the European general director of Romicon, a pioneering company in Hollow Fibre ultrafiltration also used in the electropainting market.

**MEMBRACON** engineers offer more than a century of combined experience in the electropainting Industry.

**MEMBRACON** co-operates closely with a group of international partner companies in Europe, USA and Japan who operate in the electrocoating market. 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<sup>®</sup> 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** design, install and commission:

- New Ultrafiltration (UF) systems from 50 to 12,500LPH for electropainting (e-coat) plants.
- TECTRAN<sup>®</sup> tubular anode cells (floor and side) and anode boxes.
- Anolyte Systems
- Reverse Osmosis (RO) systems 25 to 900 litres/minute to produce high quality RO water from municipal or private supplies.
- Process Filtration Systems.
- Ceramic Membrane Water Treatment Units

We also supply:

- UF membrane elements, spares, 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.
- Process tanks in mild steel (lined in rubber, PVC FRP, glass flake, lead and epoxies), stainless steel and a full range of thermoplastics. A complete relining service and onsite repairs are also available.
- Pipework systems including spray systems.
- Carry out on-site surveys, anode inspections, plant modifications, training, installation, commissioning and more...

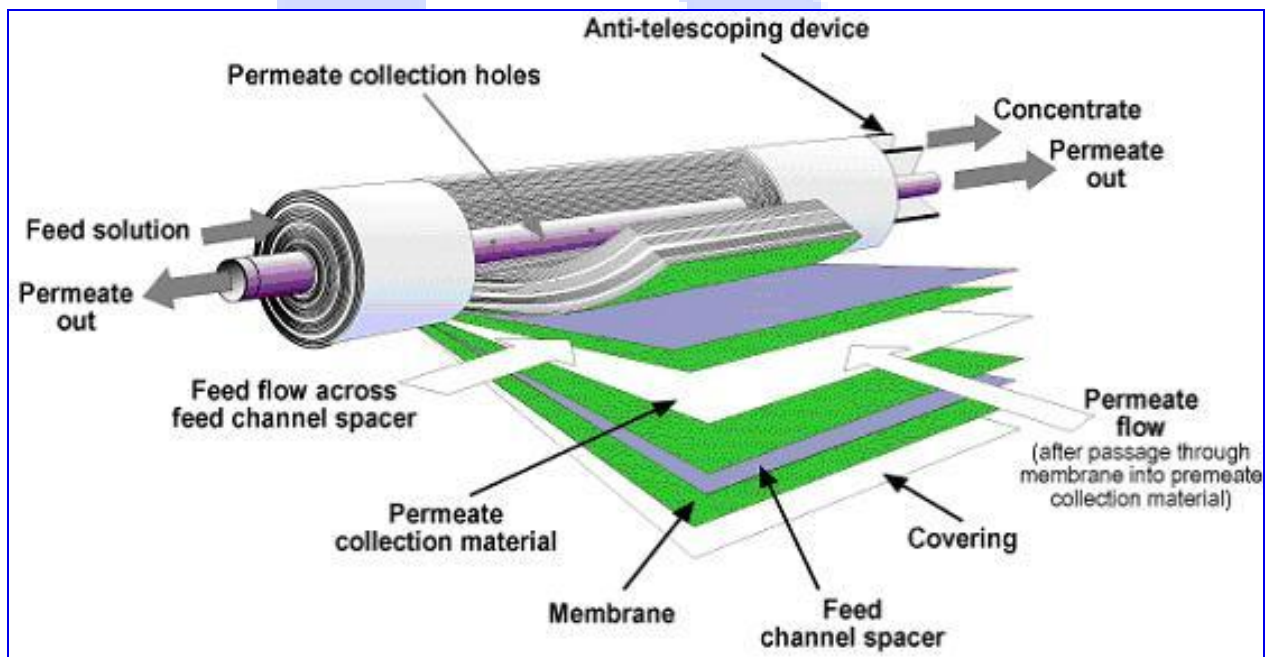
**Suppliers and designers to Automotive, Aerospace, Defence and other sectors of Industry.**

## Spiral UF Membrane 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 Spiral UF Membranes

	Volvo Belgium		Honda UK
	Daimler Benz Bremen		Ford Australia
	Stelrad Radiators UK		Gorud Engineering
	Potterton Myson		Chrysler USA
	General Motors USA		Volkswagen Mexico
	Jay Bharat Maruti Ltd (India)		Seat Spain
	Futaba Czech	 	Jaguar UK
	GKN UK		BMW UK
	Metokote (Caterpillar) UK		Benteler UK
	Nissan UK		Toyota UK
	Nacco Materials Ireland		CG Power Systems
	ThyssenKrupp UK		Malcolm Enamellers

## Spiral Wound 8" Ultrafiltration Systems For Electrophoretic Paints

### ULTRAFILTRATION HOUSINGS

Model	Material	Product Number	For Element type (In case of doubt, consult Membracon)
UF80E	PVC	4200010	EDX-B-7640H EDC-B-7640H
UF80ESS	stainless steel	4200012	EDX-B-7640H EDC-B-7640H
FLEXO PERM <sup>®</sup>	stainless steel	3010000	EDC-B-8039H

### REPLACEMENT ULTRAFILTRATION ELEMENTS 8"

Model	Product Number	Nominal capacity anodic/cathodic l/hr	Membrane type	For Housing type (In case of doubt, consult Membracon)
EDX-B-7640H	4000005	900/500	wetted	UF80E/UF80ESS
EDC-B-7640H	4002005	900/500	dry	UF80E/UF80ESS
EDX-B-7637H-K	4000006	800/450	wetted	Koch retrofit
EDC-B-7637H-K	4002006	800/450	dry	Koch retrofit
EDC-B-8039H	4002030	1000/575	dry	FLEXO PERM
EDC-B-8038N	4002001	900/500	dry	Nadir retrofit
EDX-B-8040H-O	4000009	1000/575	wetted	Osmonics retrofit
EDC-B-8040H-O	4002009	1000/575	dry	Osmonics retrofit

### ELEMENTS WITH INTEGRATED PVC HOUSING

Model	Product Number	Nominal capacity anodic/cathodic l/hr	Membrane type	For System type (In case of doubt, consult Membracon)
EDC-B-8039HK	4002007	1000/575	dry	Koch KPAK <sup>®</sup> retrofit
EDF-B-8039HK	4003007	1000/575	wet	Koch KPAK <sup>®</sup> retrofit

Capacities will vary due to external factors i.e. pressure, paint type, temperature, solids content and degree of microcoagulation caused by chemicals originating from metal surfaces and pre-treatment processes. The indications given in the table are based on worldwide average data after 1 year operation. No guarantees are implied in the data and technical details can be changed by Membracon without notice. Please consult Membracon for dimensional drawings of Elements and Housings and for recommended operating conditions.

## Spiral Wound Ultrafiltration Systems for Electrophoretic Paints

RELIABLE – COMPACT – WIDE RANGE OF MODELS – ECONOMIC



**Elements and System components with integrated PVC Housing**

**Housings and Replaceable Elements**



**FLEXOPERM**

MEMBRACON offers a wide range of ultrafiltration elements and housings / systems for electrophoretic paints. Our product range includes:

1. Housings in stainless steel or PVC for replaceable elements; a variety of element dimensions for housing models currently on the market.
2. Our patented FLEXOPERM<sup>®</sup> system/element for compactness, expansion flexibility, easier maintenance and membrane replacement.
3. Elements (and their system components) with integrated PVC housing for easier membrane replacement.

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## FLEXOPERM<sup>®</sup> Modular UF System COMPACT – EASY – FLEXIBLE – ECONOMIC

MEMBRACON's revolutionary arrangement of the housing and pipework makes the FLEXOPERM<sup>®</sup> UF-system more compact than any other UF system for electrocoat paints, its 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.

The flow pattern inside the housing eliminates the chance that paint solids glue the element the housing, making removal very easy.



“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.

	ANODIC	CATHODIC
Initial capacity (Litres/element/hr)	1800-2300	900-1200
Nominal capacity (Litres/element/hr)	1000	575
Paint recirculation rate (M3/hr)	18 – 24	18 – 24
Paint inlet pressure (Bar)	3.2 – 3.5	3.2 – 3.5
Paint pressure drop (Bar)	1.8 – 2.0	1.8 – 2.0



European patent 1524026.

Capacities will vary subject to external factors such as paint type, temperature, solids content and microcoagulation caused by chemicals originating from metal surfaces and pre-treatment. Figures given in the table are based on worldwide average data. Guarantees are implied in the data. Dimensions can be changed by Membracon without notice.

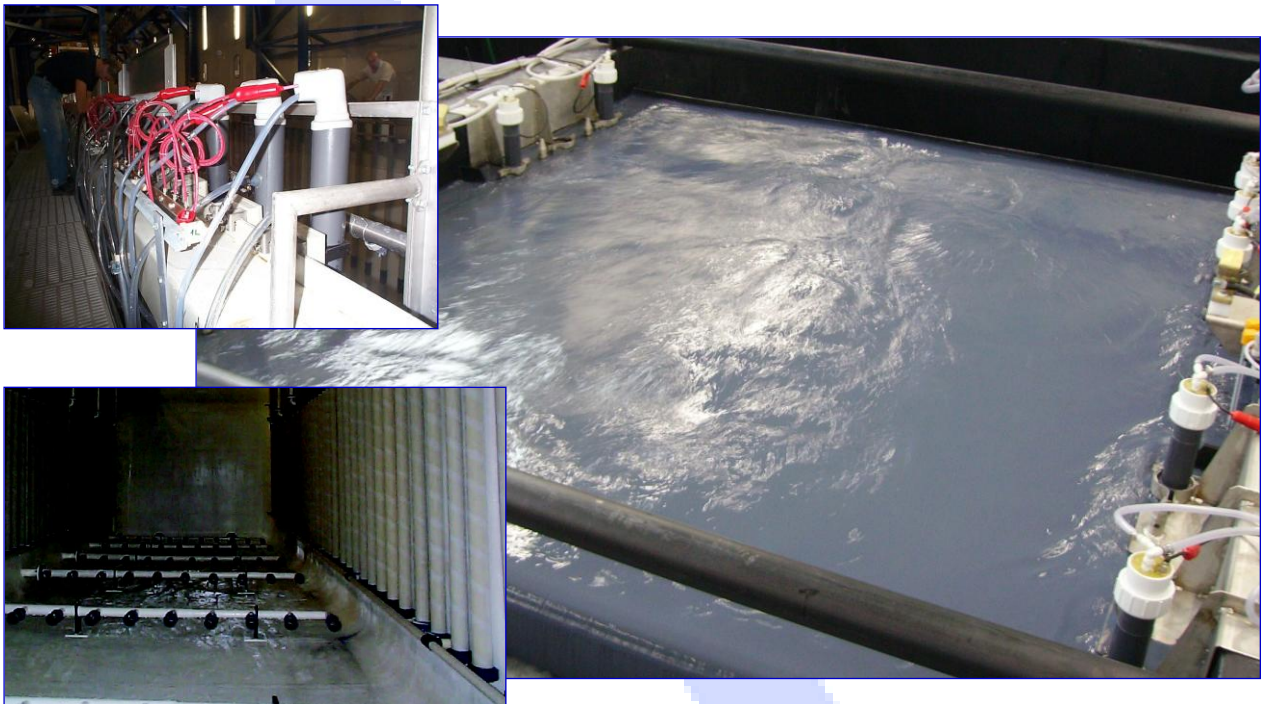


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## TECTRON<sup>®</sup> Tubular Anode Cells

LONG LIFE – BETTER THROW POWER – FLEXIBLE  
– ECONOMIC



Tectron<sup>®</sup> cells are manufactured in a wide variety of qualities, dimensions and options; the ideal mix of product properties can be optimized for each individual electrocoat plant.

Tectron<sup>®</sup> tubular anode cells use a licensed technology for the internal anolyte flow pattern. This feature means that a relatively high percentage of the ion ex-change membrane is available for the electrical current, which is an important quality aspect of anode cells. The chance that biological and corrosion sediments will blind the ion exchange membrane is reduced.

Tectron<sup>®</sup> anodes are heat sealed twice, achieving almost absolute reliability. Accessories such as mounting supports, flow indicators and blocking diodes are available to make installation easy; Membracon can also assist in the design of the anode system.

Tectron<sup>®</sup> anode offers improved efficiency, lower electrical resistance and lower operating cost, together with easier handling in placement.  
1½" & 2" diameter, length to suit customer's requirements.

## TECTRON<sup>®</sup> Tubular Anode Cells

	T1	T2	T5
Electrode Dia	48mm	60.3mm	143mm
Electrode M <sup>2</sup> /M	0.15	0.19	0.45

SUMMARY OF AVAILABLE OPTIONS	
MEMBRANE SHELL	ELECTRODE
T1, T2, T5	T1, T2, T5
Type LCAN (standard) or PTAN (premium)	Wall thickness S40 (standard) or S10, from welded tube (standard) or seamless.
Open or closed top	
Splash guards	Stainless Steel AISI 316L (1.4404) as standard, other grades or Titanium coated at extra cost.
Membrane guards	
Bumper	Diode

Some of the options and accessories for Tectron<sup>®</sup> anode cells.



Guard for Protection against mechanical damage




Bumpers for reduced movement behind a crash rail



## Customers using TECTRON<sup>®</sup> Tubular Anodes

Tectron<sup>®</sup> anode tubes are used extensively throughout the world as you can see below.

	Mitsubishi Australia		Ford Worldwide
	Jay Bharat Maruti Ltd		GM Holden Australia
	Stadco Powys UK		Honda UK (floor and wall cells)
	Mazda Japan		Galvatek Finland
	Nissan Japan		Volkswagen Sweden
	Volvo Sweden		Renault Czechoslovakia
	JCB UK		Volga Russia
	Suzuki Hungary		Seat Spain
	Grorud Engineering UK		GKN UK
	BMW UK		Futaba (Czech Rep.)
	Jaguar UK		Metafin UK
	ThyssenKrupp UK		Metokote (Caterpillar)

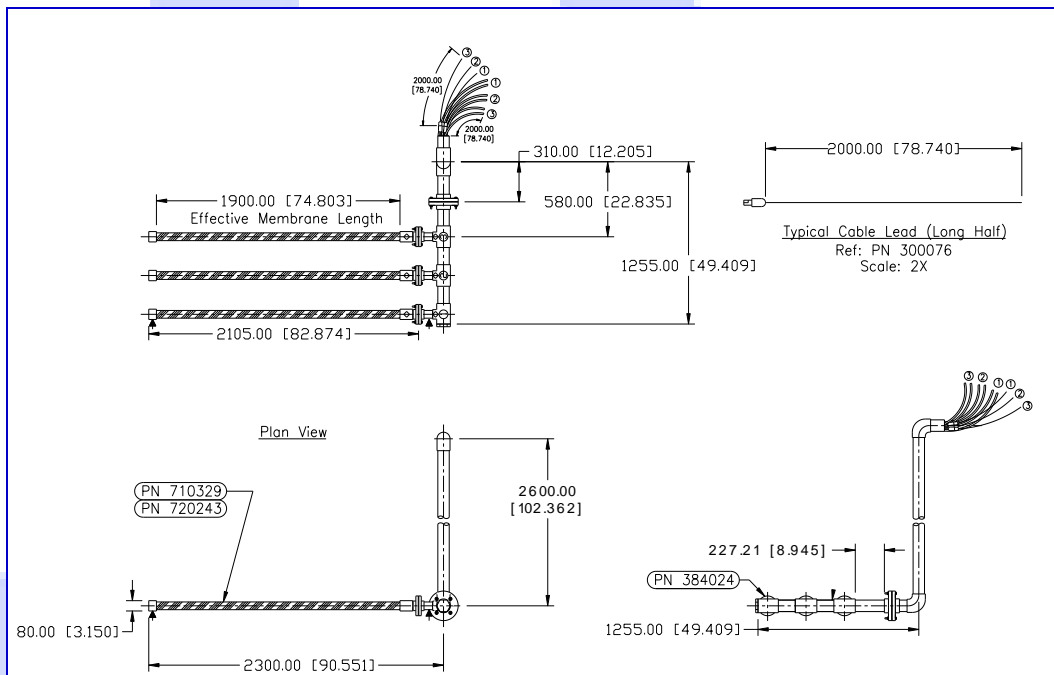
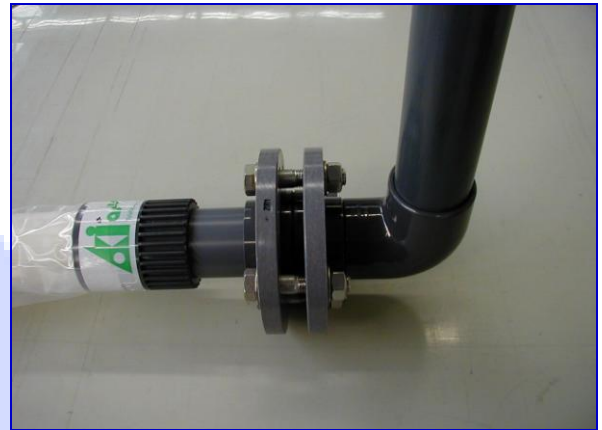
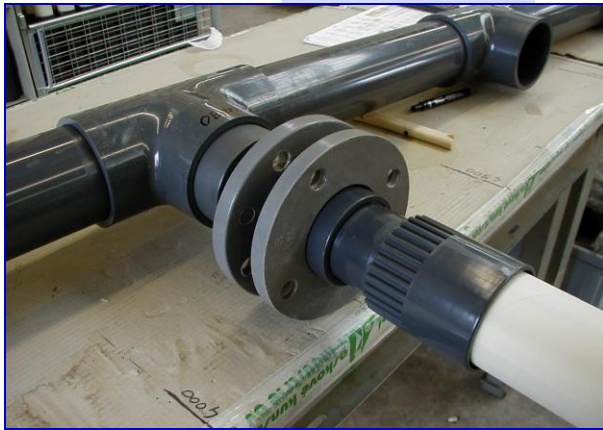
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## TECTRON<sup>®</sup> Anode floor cells

Tectron<sup>®</sup> anode floor cells are manufactured and supplied to the larger electrocoat baths mainly in the automotive industry. Existing customers include:

Honda UK  
 Nissan UK  
 Suzuki Hungary  
 GM Holden Australia





## TECTRON<sup>®</sup> Flat anode cells

OPTIMAL USE OF MEMBRANE AND ELECTRODE SURFACE AREA.  
IMPROVED ANOLYTE FLOW FOR REDUCED BIOLOGICAL GROWTH.  
AVAILABLE IN OPEN OR CLOSED VERSION.



TECTRON flat anode cells are provided with coated steel support bars. The distance between the bars is optimized to the cell length.

All dimensions of TECTRON flat cells can be customised for the specific plant conditions.

Open top version allows for easy electrode removal and inspection.

Mounting racks are made to fit existing tank rim support

### Advantages of flat anode cells:

- Flat anode cells contain more electrode area per unit, so fewer anodes are needed for the same duty which also means fewer electrical and anolyte connections.
- Membrane replacement is cheaper for flat anode cells but it does require emptying of the paint tank prior to their removal from the tank for membrane replacement.

### ALSO AVAILABLE:

HALFROUND CELLS, TUBULAR CELLS.

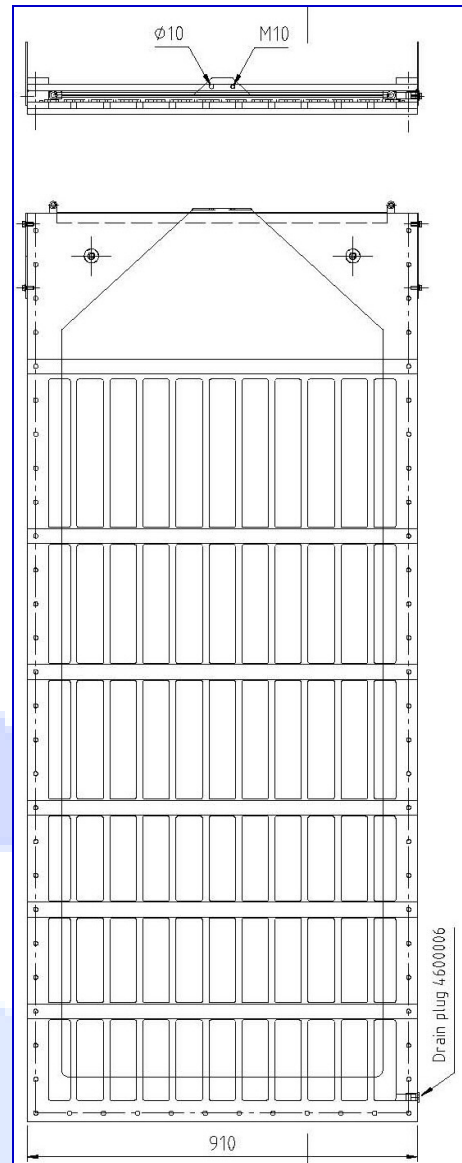
## TECTRON<sup>®</sup> Flat anode cells

Customized length of submerged cell and top part

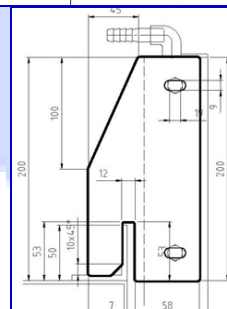
- Electrode in open cells can be removed from the top.
- Absence of stagnant area behind the electrode reduces biological growth.
- Very small distance from tank wall, total 85 mm to outside of support bars.
- Frame and cover plate in PP construction, precision machined.
- Choice between 2 membrane qualities for cathodic paint
- The Electrode is made from 316L stainless Steel of 2-3 mm thickness, other stainless steel quality or coated Titanium on request.
- The electrode has 0,73 m<sup>2</sup> surface area per meter of submerged cell depth
- Two anolyte feed connections and 2 anolyte return connections for improved anolyte flow pattern.
- Current density of 30 – 50 amp/m<sup>2</sup> is typical at 200 - 400 volts.



An Automatic Machine



Example of a purpose made mounting bracket



## UV Bacteria Prevention

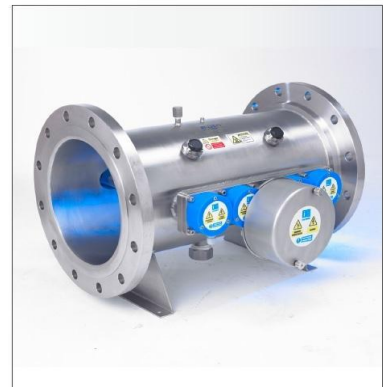
The atg UV Technology ECL series provides the very latest in medium pressure UV lamp technology and in-line UV chamber design. Offering increased treatment capacity and flexibility for the environmentally friendly process of disinfection, the ECL series provides solutions for a range of applications.

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.
- 1.0m<sup>3</sup>/hr – 5000m<sup>3</sup>/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





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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
<b>Performance</b>									
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 <sup>2</sup> to 120 mJ/cm <sup>2</sup> RED (Reduction Equivalent Dose)								
<b>UV lamps and monitoring</b>									
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)								
<b>UV Chamber</b>									
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								
<b>Technical</b>									
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								





## MEMBRATER Removal of bacteria from demineralised water in electrocoating

FULL RETENTION OF BACTERIA AND MOULDS – HIGH CAPACITY.  
HIGH FOULING RESISTANCE – LONG LIFE.  
USES EXISTING LINE PRESSURE.



Dead-end Hollow fibre ultrafiltration cartridges and systems designed to remove almost 100% of dead and live bacteria and moulds from demineralised water.



With the introduction of lead-free paints and the reduction of solvent levels in electrocoat paints, bacteria and moulds grow more easily and cause more maintenance and quality problems in the plants.

One the potential sources of bio-contamination is in the demin water used in pretreatment rinses, to make up paint paste and maintain liquid levels!

Removing the contamination must be part of any programme aimed at reducing bio-contamination.

## 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 TiO<sub>2</sub>



Version 1



Quattroflow 1000/1200 S



Quattroflow 4000 S



Version 2

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

Version1: for laboratory size 10mm Dia membranes (area 0.02 – 0.1 m<sup>2</sup>) in combination with the Quattroflow 1000/1200 S pump.

Version2: for industrial size 25mm Dia membranes (area 0.1 – 0.5 m<sup>2</sup>) 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  $\Delta P$  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 <sub>2</sub>			
length	area (m <sup>2</sup> )	area (m <sup>2</sup> )	area (m <sup>2</sup> )
			
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 <sub>2</sub>			
Length	area (m <sup>2</sup> )	area (m <sup>2</sup> )	area (m <sup>2</sup> )
			
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:

## Anode System Service Utilising TruIDL Data Logging

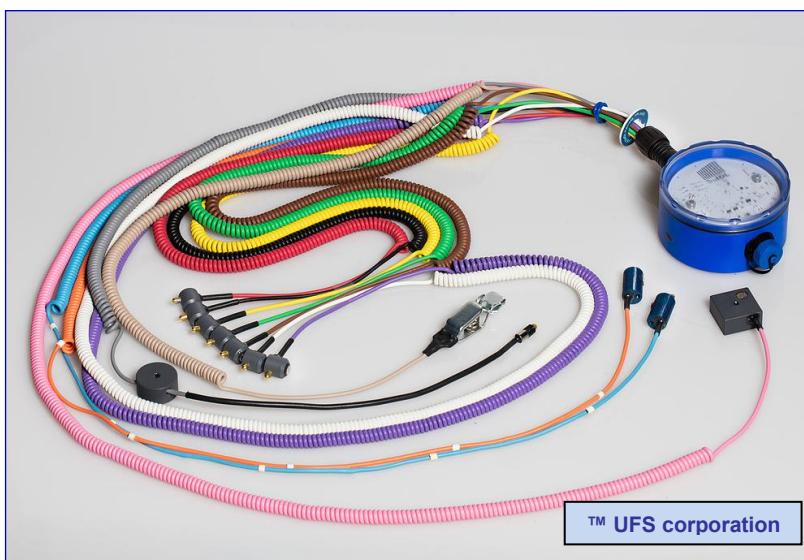
MEMBRACON's Anode System Service utilising TruIDL Data Logging for electrocoating plants shows customers where in the electrocoat tank the paint film is formed and on which section of the coated components. At the same time the characteristics from the graphs produced reveal problems in the anode system such as rectifier ripple, loose electrical connections or anode cells which have a high electrical resistance.

Running the service on a regular basis (1to4 times per year) and comparing the various curves from previous data shows the effects of ageing of the anode membrane on the efficiency of the anode system.

Our service enables customers to understand in depth the deposition process taking place inside the electrocoat tank and take the necessary action to maintain the process quality and efficiency at a very high level.

### Reliable & Accurate Monitoring

The TruIDL™ (Submersible Data Logger) measures voltage at specific points on the surface of the component in an electrocoat paint system. Voltage is directly related to the amount of electrocoat paint film that has formed on the component. The TruIDL voltage sensors are attached with magnets to the component. Voltage is logged as the component moves through the tank. The result is a graph that displays the components voyage through the paint tank.



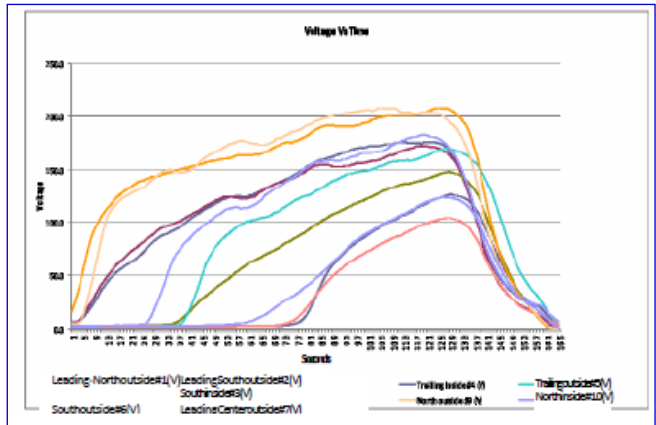


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## Voltage V Time

Voltage is the potential variable available to carry or push electric current. Electric current is what causes electrocoat paint solids to form on the component. Voltage is affected by resistance; therefore places in the electrocoat tank with more resistance display a curve with less voltage. In the chart (right), at the start the voltage at the component is very low but as time goes on the electrocoat film begins to form and so does its resistance. Hence voltage increases towards the end of the electrocoat paint cycle. As the component moves past the last IME cell the voltage then trails off to zero.



## Product Advantages

**Measures Complex Shapes:** Up to 10 voltage sensors allow for monitoring the voltage change over very complex geometries – Do more in less time – In just one turn you can check 10 locations for electrocoat film build. Built in magnets make attaching the Data Logger to the component easy

**Anode Monitor Alternative:** If you have been contemplating the purchase of a Membrane Electrode (ME) Cell Current Monitor, then you should consider the Membracon Anode System Service as a smart alternative. Although it does not record electric current detail, it provides a relative overview of ME Cell performance for the entire electrocoat tank.

**Process Monitoring:** Use the Membracon Anode System Service to gather baseline data. Subsequent runs over regular intervals allow you to create trend line charts and diagnose performance issues such as:

- **Electrical Ground:** When all the curves begin going down quickly the component has most likely lost its ground. If the component is lightweight then perhaps it requires a different hook style or there may be an issue with the conveyor grounding system, misdirected educator jet, etc.
- **ME cell Condition:** A dip in one curve may indicate poor performing ME cell in that area of the tank. This could be caused by increased resistance in the ion-exchange membrane; an eroded electrode; loose electrical connection; low/no anolyte fluid inside the cell, etc.

**Contact Membracon (UK) Ltd for more information.**

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## 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

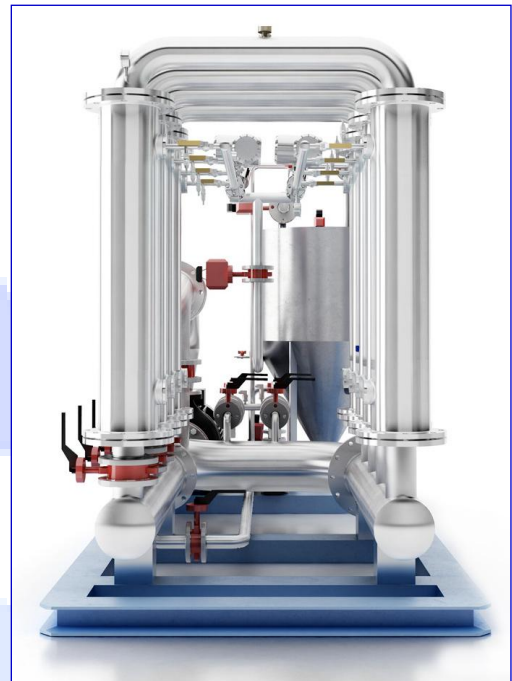
## Ceramic Membrane Water Treatment Units

**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 2,000m<sup>3</sup>/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.



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## Process tank, linings, fabrications and pipework

MEMBRACON supply Process tanks in mild steel (lined in rubber, PVC FRP, glass flake, lead and epoxies), stainless steel and a full range of thermoplastics. A complete relining service is also available. We have the capacity to handle up to 27 tonnes of fabrication work.

On-site tank lining spark testing and repair service available.

We also supply and install pipework systems including spray systems, carry out modifications, installation and more...



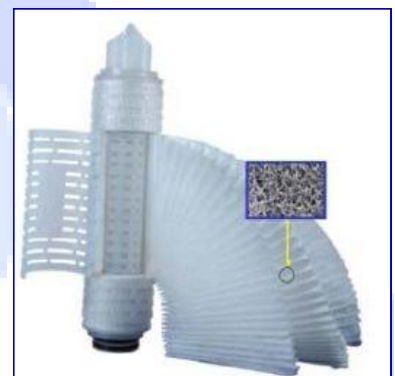
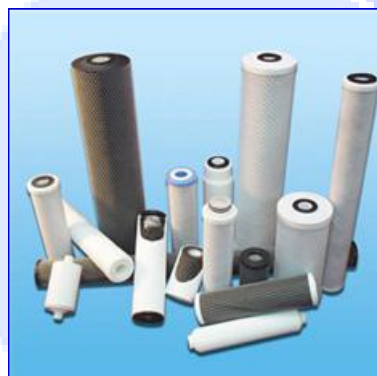
## Process Filtration Equipment & Media

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.....



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## Ancillary Spares



**Burner Spares**



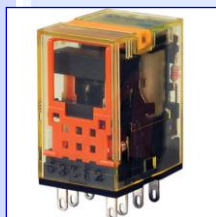
**Ignition Spares**



**Alternative Flowmeter**



**Standard Flow Indicator**



**Relay Switch**



**Fixing Clamp**



**Anode Guard for mechanical protection**



**Bumpers to reduce movement behind a crash rail**



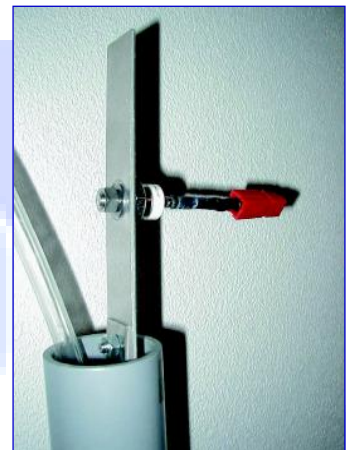
**Quick release cables**



**Bulkhead for closed top anodes**



**Splash Guard**



**Diode with heat sink**



## 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**



## 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.

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**LAB TEST RIG  
 30ltr/hr PERMEATE**



**4" UF RIG INCLUDING  
 CLEAN IN PLACE SYSTEM  
 300ltr/hr PERMEATE**

**8" FLEXO PERM<sup>®</sup> UF RIG  
 INCLUDING CLEAN IN PLACE  
 SYSTEM  
 4,500ltr/hr PERMEATE**



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**6" UF RIG  
INCLUDING CLEAN IN PLACE SYSTEM  
600ltr/hr PERMEATE**



**8" UF RIG INCLUDING  
CLEAN IN PLACE SYSTEM**

**3,000ltr/hr PERMEATE**



**8" UF RIG INCLUDING  
CLEAN IN PLACE  
SYSTEM  
10,000ltr/hr PERMEATE  
FOR AUTOMOTIVE &  
AEROSPACE  
INDUSTRY**

