



PCI Membranes[®]
Filtration Group[®]

TUBULAR MEMBRANES

PREMIUM PERFORMANCE FOR
CHALLENGING PROCESS STREAMS.



www.pcimembranes.com

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Why Tubular Membranes?

Easy maintenance and cleaning

Compatible with standard chemical cleaning and mechanical cleaning with “foam balls”, reducing downtime and overall cleaning chemical usage.

Designed for challenging feeds

Wide flow channels handle high-viscosity fluids and suspended solids while minimizing clogging and reducing or eliminating pre-treatment.

Cost-effective and efficient

Simplified processing and lower fouling help reduce operating costs, especially for small to mid-scale systems.

Advanced, customizable performance

Tailored membrane cut off options offer improved selectivity, higher flux, and enhanced resistance to many liquids including acids and caustic base chemicals.



Applications

Applications where tubular membranes have been selected as the best process solution include:

- Wood pulp bleach wastewater separation
- Lignosulphonate fractionation
- Side-stream (external) membrane bioreactors (MBRs)
- Landfill leachate treatment
- Metal finishing wastewater separation
- Active Pharmaceutical Ingredient manufacture
- Manufacture of fine chemicals (various)
- Dairy applications (e.g. dairy concentration)
- Fruit juice clarification
- Drinking water treatment
- Textile dye processing (e.g. desalting)
- Textile process wastewater treatment/reuse
- Clean In Place (CIP) solution recovery
- Water / Product recovery
- Acid purification
- Process R & D (academic and industrial)

A wide range of tubular membranes

Our range of over 29 tubular membranes offers solutions that are suitable for all these applications. The variety of materials employed provides a range of chemical compatibilities, with their exhaustive development delivering unmatched performance. The range also incorporates products with UK Drinking Water Inspectorate approval, proving their suitability for municipal applications.

A Series

A Series tubular module incorporates a robust, low cost module in stainless steel AISI housing for A5, A19 and A37 modules or GRP for A8 modules, together with a choice of tubular membranes in various molecular weight cut-off range.

The open channel design enables you to process liquids with high levels of suspended solids without plugging and facilitates highly effective cleaning in place. The compact design gives the module a high mechanical strength allowing operating pressure of 7 to 10 bar subject to tube diameter.

A5 SERIES



PCI Membranes@ compact A5 tubular ultrafiltration module can be used for a wide range of industrial applications in the process industry for the economic concentration and clarification of process liquids and wastewaters. The module comprises of a replaceable core of 69 tubes of 6mm diameter and uses PCI's robust PVDF membranes which are suited to a variety of different process conditions. Cores are fitted into PCI's proven stainless steel housings. The compact design gives the module a high strength allowing operating pressures of 10 bar. PCI's unique in-situ replaceable core enables fast, easy and cost effective remembraning.

A8 SERIES



The A8 tubular modules permit simple, rapid, high area and inexpensive tubular MF and UF membrane filtration for new and existing installations in the waste water industry. Modules are offered in two sizes (8" & 10") and two lengths (3m & 4m), each housing has 8mm in diameter membrane tubes, cast in epoxy resin at each end. Both lengths are designed for retrofitting to non-PCI systems and manufactured with materials approved by the FDA, CFR21 and EU regulations.

A19 SERIES



The A19 tubular UF system incorporates a robust, low-cost module in stainless steel, together with a choice of tubular membranes in various materials. The removable core design (RCM) permits simple, rapid, and inexpensive membrane replacement. Modules are offered in two lengths (3.05m & 3.66m), each housing 19 membranes, 12.5mm in diameter, cast in epoxy resin at each end. Both lengths are designed for retro-fitting to non-PCI systems. To ensure system integrity, on-line permeate sampling from individual modules is available. Manufactured with materials approved by the FDA, CFR21 and EU regulations. The compact design gives the module a high strength allowing operating pressures of 7 bar. PCI's unique in-situ replaceable core enables fast, easy and cost effective remembraning.

A37 SERIES



The A37 tubular UF system incorporates a robust, low-cost module in stainless steel, together with a choice of tubular membranes in various materials. The removable core design (RCM) permits simple, rapid, and inexpensive membrane replacement. The modules are 3.66m in length, housing 37 membranes, 12.5mm in diameter, cast in epoxy resin at each end. To ensure system integrity, permeate sampling from individual modules is available. Manufactured with materials approved by the FDA, CFR21 and EU regulations. The compact design gives the module a high strength allowing operating pressures of 7 bar. PCI's unique in-situ replaceable core enables fast, easy and cost effective remembraning.

B1 Series

The tubular B1 module provides the user with a robust, proven, ultra filtration, nanofiltration and reverse osmosis module and a wide range of fully interchangeable membrane elements. Each module, up to 3.6m long, comprises 18 perforated stainless steel tubes in the form of a shell and tube, each tube fitted with a membrane element. The shell, or shroud, is also fabricated from stainless steel and has outlets fitted for the permeate, the liquid that passes through the membrane. Manufactured with materials approved by the FDA, CFR21 and EU regulations.

Series Flow (RO) Arrangement



Each Reverse Osmosis module comprises 18 perforated stainless steel tubes in the form of a shell and tube, each tube fitted with a membrane element. Flow of the process fluid through each of the tubes is effected by specially designed end caps connecting all eighteen tubes in series. The open channel, highly turbulent flow design allows a wide variety of process liquors to be concentrated, with minimal pretreatment. High levels of suspended materials can be tolerated. The design is free of dead spaces, which reduces the fouling potential of the membranes while ensuring maximum effectiveness of cleaning in-situ procedures.

Twin Entry (UF) Arrangement



Each ultrafiltration module comprises 18 perforated stainless steel tubes in the form of a shell and tube, each tube fitted with a membrane element. Flow of the process fluid through each of the tubes is effected by specially designed end caps providing 2 parallel channels, each of 9 tubes in series. This allows viscous materials to be processed and high cross flow velocities to be used with acceptable pressure drop. The open channel, highly turbulent flow design allows a wide variety of process liquors to be concentrated, with minimal pretreatment. High levels of suspended materials can be tolerated. The design is free of dead spaces, which reduces the fouling potential of the membranes while ensuring maximum effectiveness of clean-in-situ procedures.

Parallel Flow (UF) Arrangement



Each module comprises 18 perforated stainless steel tubes in the form of a shell and tube, each tube fitted with a membrane element. Flow of the process fluid through each of the tubes is effected by specially designed end cap providing 18 parallel channels. This allows viscous materials to be processed and high cross flow velocities to be used with acceptable pressure drop. The open channel, highly turbulent flow design allows a wide variety of process liquors to be concentrated, with minimal pretreatment. High levels of suspended materials can be tolerated. The design is free of dead spaces, which reduces the fouling potential of the membranes while ensuring maximum effectiveness of cleaning-in-situ procedures.

C10 Series, evaluation & test modules

C10 Series tubular module consists of a housing containing a bundle 72 perforated ABS tubes. The tight tubular UF membranes or tubular NF membranes are inserted into these tubes. The membranes are sealed into the tubes by rubber tubes seals, and then the tubes are connected by U bends plugged into the tubes seals. This provides a continuous hydraulic path through all 72 tubes in series. Modules are usually mounted in parallel in arrays called stacks. For each stack, pipework may be provided to distribute the feed fluid to the C10 modules, and collect concentrate and permeate from the C10 modules.

C10 SERIES



The C10 module, offers the user an economic tubular module which can be fitted with a dedicated range of proven nanofiltration and ultrafiltration membranes. The module, has been developed to improve the competitiveness of tubular membrane plants, especially at larger capacities. It can be operated at 12 bar at 20°C.

Micro 240&960 short term MF, UF, NF & RO evaluation modules



The MICRO 240 & 960 is designed for the economic, short term evaluation of membrane processes for separation and concentration at laboratory bench-scale. This inexpensive module may be fitted, by the user, with samples of any of PCI Membranes' wide range of tubular Microfiltration, Ultrafiltration, Nanofiltration or Reverse Osmosis membranes. Constructed in 316 stainless steel, the module has termination points allowing easy connection by flexible or welded couplings to existing equipment. Larger modules and ancillary components are available if required.

Classic Series membranes range



The Classic tubular membrane product are well suited to handle aqueous feeds with high levels of dry substances (up to 40,000 ppm), high viscosities, or high degrees of fouling. The PCI Classic membranes is available in a wide range of tubular Ultrafiltration and Reverse Osmosis membranes. Constructed in plastic modules and offered in three lengths (2m, 3m and 6m).

Pilot units - pilot scale production and processing



The unit is designed for pilot scale work and may be used to process a wide variety of aqueous solutions using Microfiltration (MF), Ultrafiltration (UF), Nanofiltration (NF) or Reverse Osmosis (RO). A wide range of membranes is available to suit the required application. Both designs are supplied with instrumentation necessary for scale up data to be collected accurately and easily. Customisation is available to allow use for small production requirements in continuous, semi continuous or batch operation.

Our commitment to quality

PCI Membranes® is committed to providing filtration products that deliver exemplary value and dedicated service that consistently delights our customers. We work to accomplish this with ongoing improvements across our business practices and with diligent adherence to our Quality Management System.

Quality Assurance – Proven Membranes

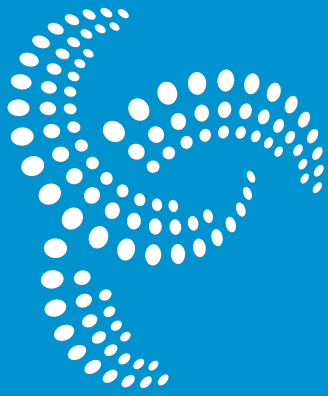
PCI Membranes® designs, manufactures and provides supply and servicing of equipment for liquid separation to the quality standard: ISO 9001:2015.

Testing and traceability

Destructive testing is carried out on samples of every membrane batch, as well as performance testing of all RO and NF membranes. Finished membranes are preserved and stored under carefully-controlled conditions to prevent deterioration during storage. A computerised records and coding system provides for complete traceability of each membrane produced and facilitates traceability to confirm that the membranes meet PCI Membranes® high quality standards.

Guarantees

PCI Membranes®' products are offered with guarantees commensurate with their application and conditions of use. Additionally our experience of delivering membrane solutions allows us to provide extensive process performance guarantees when offering complete systems.



PCI Membranes®

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Making the World Safer, Healthier & More Productive



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