

AQUADYN® Ultrafiltration Modules

Smarter Solutions for Water Treatment



**MICRODYN
NADIR**

ADVANCED SEPARATION TECHNOLOGIES



AQUADYN®

Hollow Fiber Modules

AQUADYN® modules are encased ultrafiltration hollow fiber membrane modules which effectively reduce micro-organisms and suspended solids from water. The AQUADYN® series offers a comprehensive range of filtration modules for a wide spectrum of applications. At a choice of either modified Poly Acrylonitrile (PAN) or Poly Ethersulfone (PES) a huge selection of module sizes is available.

These innovative membrane modules are developed by MANN+HUMMEL with vast R&D and business experience in filtration. The modules are manufactured under strict supervision and quality checks.

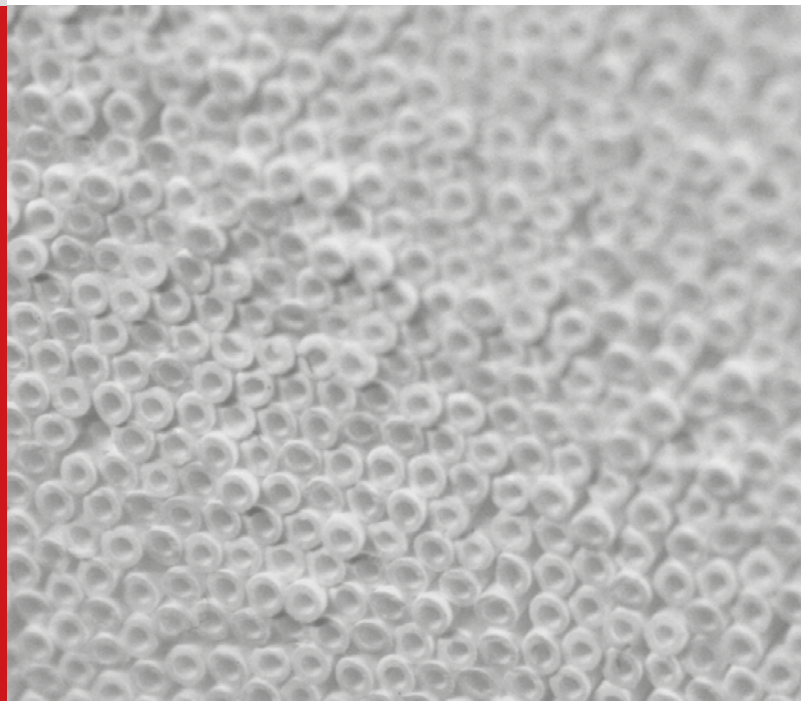
Due to the optimized design efficient flow distribution, enhanced cleaning, minimal pressure drop and high packing density can be achieved. For applications requiring large capacities, extra large modules are available (10" x 60").

Moreover, the AQUADYN® UA (PAN) as well as the AQUADYN® UE (PES) materials are superior in their hydrophilic property compared to most other polymeric materials. The enhanced hydrophilic property improves the wettability and reduces operating pressure. Additionally, it makes the membrane more resistant to fouling; resulting in less cleaning cycles and reduced chemical usage.

The double asymmetric hollow fiber membranes offer another advantage over single asymmetric membranes. Bacteria, solids and turbidity can be rejected effectively due to a filtration layer inside and outside the hollow fiber. Therefore, problems such as pore clogging during backflush do not occur.

ADVANTAGES

- » high flow rates (high hydrophilicity)
- » high and stable permeate performance
- » most reliable process
(double asymmetric hollow fiber membranes)
- » effective retention of particles and bacteria
- » easy pre-treatment (100µm)
- » compact installation
- » high productivity
- » flexible flushing modes
- » low chemical demand

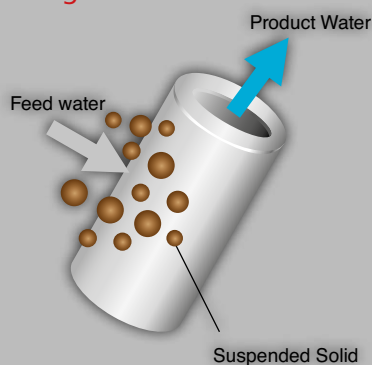


Module Specifications and Operating Data AQUADYN® UA/UE Series

Parameters	UA420-BT ¹⁾	UA640 ¹⁾	UA860 ¹⁾	UA1060 ¹⁾	UE1060 ^{1) 2)}
Structure	Hollow Fiber	Hollow Fiber	Hollow Fiber	Hollow Fiber	Hollow Fiber
Membrane surface (m ²)	6	16	45	60	55
Poresize (µm)	0.025	0.025	0.025	0.025	0.025
Housing material	Reinforced PP	uPVC	Reinforced ABS and uPVC	uPVC	uPVC
Potting	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy
Flow type	Out / In	Out / In	Out / In	Out / In	Out / In
Type of filtration	Dead End	Dead End	Dead End	Dead End	Dead End
Regeneration	-	Backflush, Air Scouring	Backflush, Air Scouring	Backflush, Forward Flush, Air Scouring	Backflush, Forward Flush, Air Scouring
Max Trans-Membrane-Pressure (bar)	3	1	1	1	1
pH range	2 - 10	2 - 10	2 - 10	2 - 10	2 - 12
Max Feed TSS (mg/l)	≤ 5	≤ 350	≤ 350	≤ 350	≤ 350

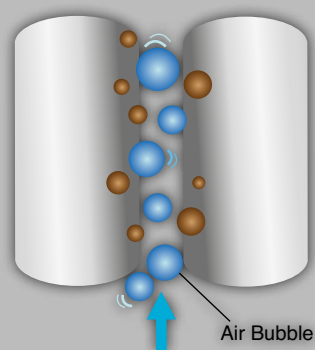
Note: (1) Only the information given in the data sheets of the single products is binding
(2) NSF Approval

Module Operating Process



Filtration Process

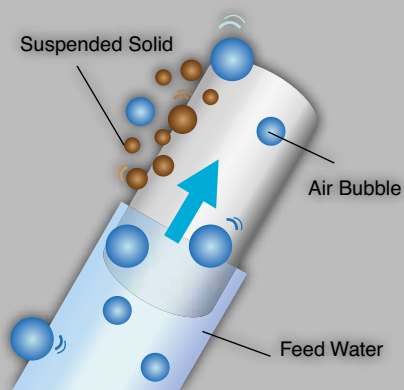
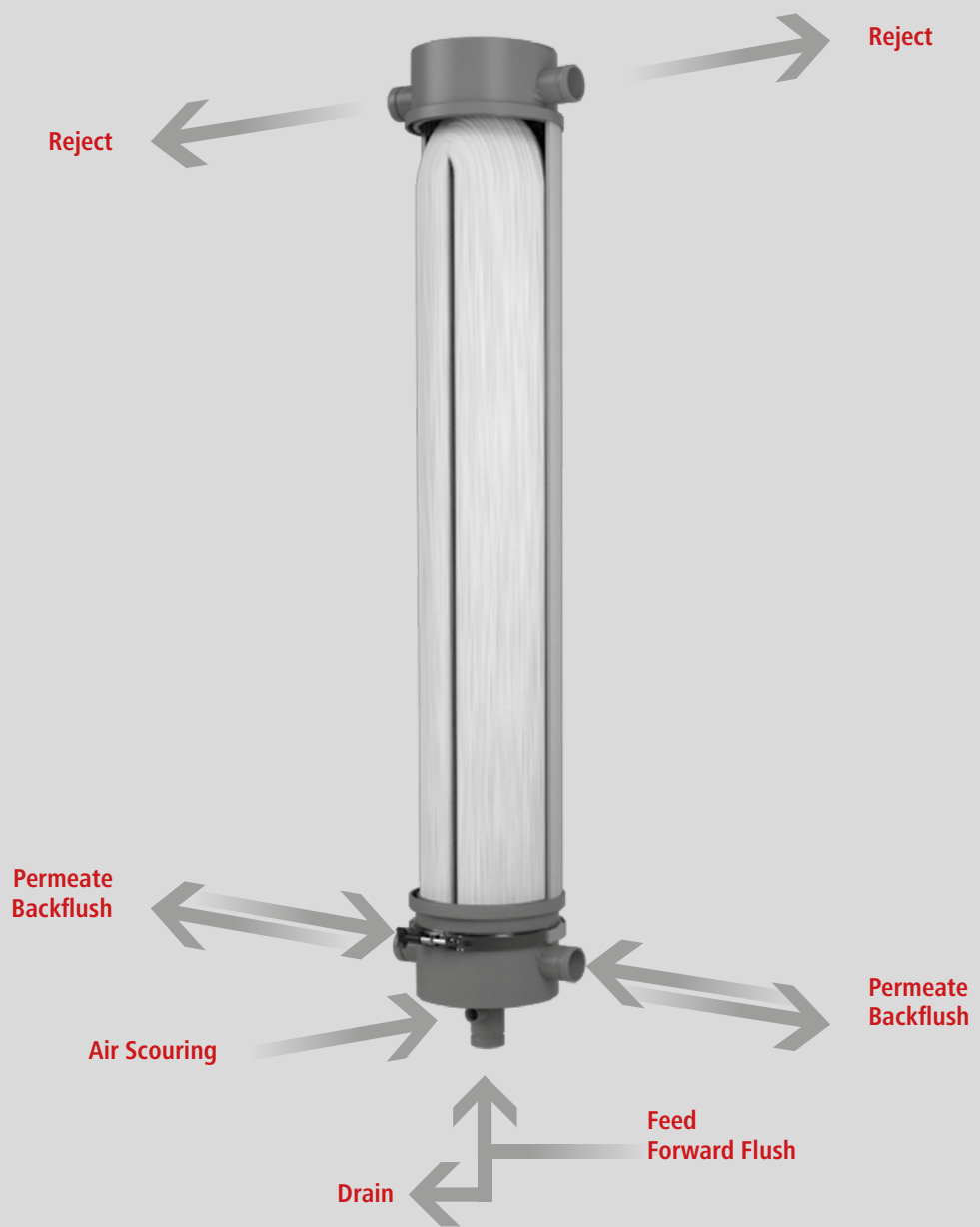
Filtration process is an outside-in flow configuration where feed water is in contact with the exterior of the fibers and the filtrate (product water) is drawn from the inside of the hollow fibers (lumen). This configuration has the distinctive advantage of a larger membrane surface area which translates into higher flows.



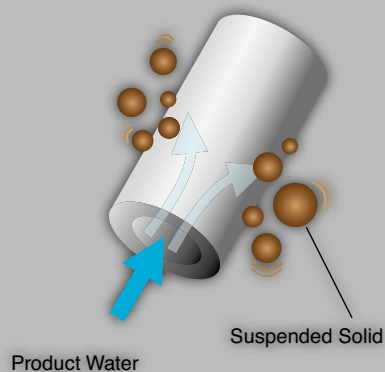
Air Scouring

During the backflush process, air is injected into the module to loosen suspended solids on the fiber surface. This enables suspended solids in the module to be flushed out effectively and prevents solid build-up.

Flushing Modes for AQUADYN® Ultrafiltration Modules



Forward Flush
Feed water flushes the exterior surface of the fiber and dilutes the retentate. Air scouring is incorporated along with this process to ensure the suspended solids are dislodged before backflushing. This reduces the use of permeate.



Backflush
Either at pre-set intervals or when reaching a predetermined transmembrane pressure (TMP), the membrane module undergoes a backflush cleaning sequence where filtrate is used to backflush from the inside of the hollow fibers, hence dislodging the solids attached to the feed surface of the fiber.

AQUADYN® Ultrafiltration Modules

Decoding of the product code:

U	A	10	60
U	E	10	60

Type	Fiber Arrangement	Membrane Material	Ø Module [mm]	Length Module [mm]
UA420-BT	U-Shape	PAN	160	604
UA640	U-Shape	PAN	168	1210
UA860	U-Shape	PAN	216	1642
UA1060	U-Shape	PAN	267	1737
UE1060	U-Shape	PES	267	1737

Applications AQUADYN® Modules

effluent treatment after biological wastewater plants
pre-treatment to reverse osmosis (sea water and brackish water desalination)
stormwater treatment
surface water treatment
borehole water treatment
karst water filtration
drinking water filtration

Final sizing and selection has to be approved by an official MICRODYN-NADIR representative. Please contact **phone + 49 611 962 6001** or **www.microdyn-nadir.de**

i 1 m² ≙ 10.764 ft² | 1L ≙ 0.26 us-gal. | 1" ≙ 2.54 cm

MICRODYN-NADIR GmbH
Kasteler Straße 45
65203 Wiesbaden / Germany
Phone: + 49 611 962 6001
info@microdyn-nadir.de

MICRODYN-NADIR US, INC.
93 South La Patera Lane
Goleta, CA 93117, USA
Phone: + 1 919 341 5936
info@microdyn-nadir.com

MICRODYN-NADIR
(Xiamen) Co. Ltd
No. 66 Jinting North Road Xinglin
Xiamen, China 361022
Phone: + 86 592 677 5500
infochina@microdyn-nadir.cn

MICRODYN-NADIR Singapore Pte. Ltd.
18 Tuas Avenue 8
639233 Singapore
Phone: +65 6457 7533
info@microdyn-nadir.com



**MICRODYN
NADIR**

ADVANCED SEPARATION TECHNOLOGIES

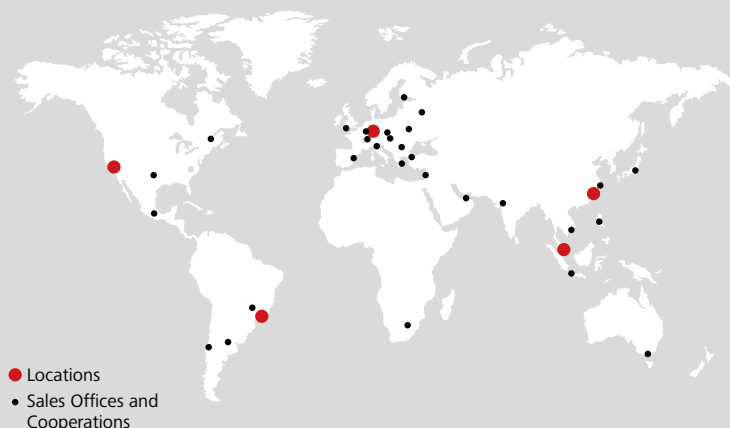
SEPARATION – OUR PASSION

For more than 50 years, MICRODYN-NADIR has developed innovative membranes and membrane modules for micro-, ultra- and nano-filtration as well as solutions to support our customers' needs in operation, performance, efficient membrane processes and regulatory compliance.

We will deliver products, information and services, which fully meet or exceed customer expectations. Our team focuses on continual improvement to achieve the highest possible level of customer satisfaction and to be recognized by our customers as the technology and quality leader.

We are not satisfied until our products have been successfully integrated into your customers' plants and processes. That is our passion.

Our quality system is designed to support these goals.



WE SUPPORT YOU – WORLDWIDE!

- » Global availability
- » Intensive technical consulting
- » Ideal choice of membranes and modules
- » Support with engineering and plant design
- » Laboratory and pilot tests
- » After Sales Service



WWW.MICRODYN-NADIR.COM