ZeeWeed* 500 Ultrafiltration (UF) Hollow-Fiber Membranes for Large Municipal MBR

CUSTOMER BENEFITS

WATER TECHNOLOGIES

VEOLIA

Experience, Expand, Evolve with ZeeWeed MBR

For large municipal customers with operational capacities of over 5 MGD (>19 MLD), the ZeeWeed 500EV offers significant improvements in membrane density, energy and maintenance costs, and exceptional membrane life.

Addressing the everchanging needs of Large Municipal customers looking to:

- Lower the CAPEX associated with expanding capacity
- Increase treatment capacity by 50% in a smaller footprint
- Reduce annual energy and maintenance costs
- Enjoy longer membrane life with simplified maintenance

Performance

- High flux dedicated MBR membrane chemistry since 2007 with permeability > 900 lmh/bar
- True UF membrane for over 25 years with proven 0.035 µm nominal pore size
- Patented LEAPmbr aeration providing exceptional energy consumption savings
- Superior fiber strength, 60x greater than non-reinforced PVDF membranes

Reliability

Exceptional membrane reliability and product life with many municipal customers achieving 12 to 16 years operation; longest proven life 21 years!

Veolia stands by its products offering peace of mind with warranties up to 20 years in duration.

Proven Experience

Over 2500 MBRs globally running with ZeeWeed 500 membranes. More than 1.5 million operating modules treating over 32000 MLD (8325 MGD) daily.

Flexibility & Simplicity

Configurable product to provide plant layout versatility for easy future expansion even for those with footprint constraints.

Demonstrated simple retrofit solutions for conventional upgrades and more than 15 other MBR membrane suppliers.

ZeeWeed 500 in Action

Henriksdal WWTP, Sweden

ADF 536 MLD (142 MGD)

MDF 864 MLD (228 MGD) PH1

Commissioned 2020

Luo Fang WWTP, China

ADF 400 MLD (106 MGD)

MDF 462 MLD (122 MGD)

Commissioned 2018

Seine Aval WWTP, France

ADF 218 MLD (59 MGD)

MDF 348 MLD (92 MGD)

Commissioned 2017

Euclid WWTF, USA

ADF 83 MLD (22 MGD)

MDF 250 MLD (66 MGD)

Commissioned 2018

Beijin Shunyi WWTP, China

ADF 180 MLD (48 MGD)

MDF 234 MLD (62 MGD)

Commissioned 2016

Brussels Sud WWTP, Belgium

ADF 86 MLD (23 MGD)

MDF 190 MLD (44 MGD)

Commissioned 2018

Oxford WWTP, Canada

ADF 13 MLD (3.6 MGD)

ADF 13 MLD (3.6 MGD)

Commissioned 2008

Proven membrane life 17 years

Traverse City WWTP, USA

ADF 27 MLD (7.1 MGD)

MDF 64 MLD (17 MGD)

Commissioned 2005, Upgraded 2014

Proven membrane life 16 years

Brescia WWTP, Italy

ADF 30 MLD (8 MGD)

MDF 60 MLD (16 MGD)

Commissioned 2002, Upgraded 2015

Proven membrane life 14 years

Cassette Properties

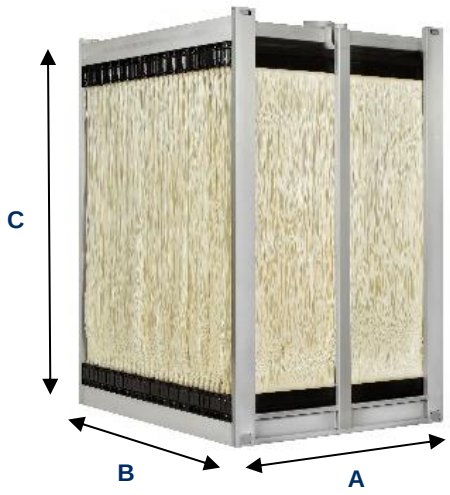


Table 1: Cassette Dimensions

Product	Width (A) mm (in)	Length (B) mm (in)	Height (C) mm (in)
500EV T-64M	1,744 (68.7)	2,136 (84.1)	2,735 (107.7)

Table 2: Cassette Tie Points and Weights

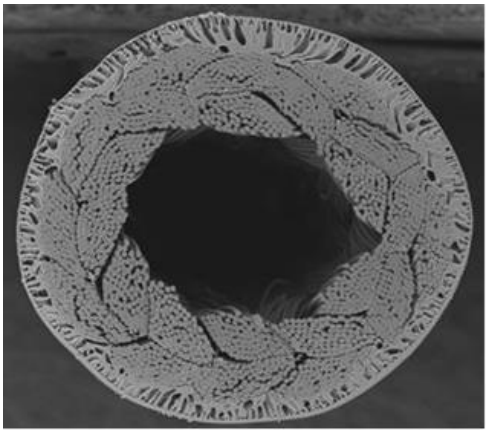
Application	Product	Max. # of Modules	Min. # of Modules	Permeate Connection	Air Connection	Max. Shipping Weight [1] kg (lb)	Wet Weight [2] kg (lb)	Lifting Design Weight [3] kg (lb)	Cassette Material
LEAPmbr	500EV T-64M	64	32	1 x 8” vert. pipe	1 x 3” FNPT half coupling	2,091 (4,610)	2,348 (5,165)	4,536 (10,000)	316L SS frame with engineered plastics

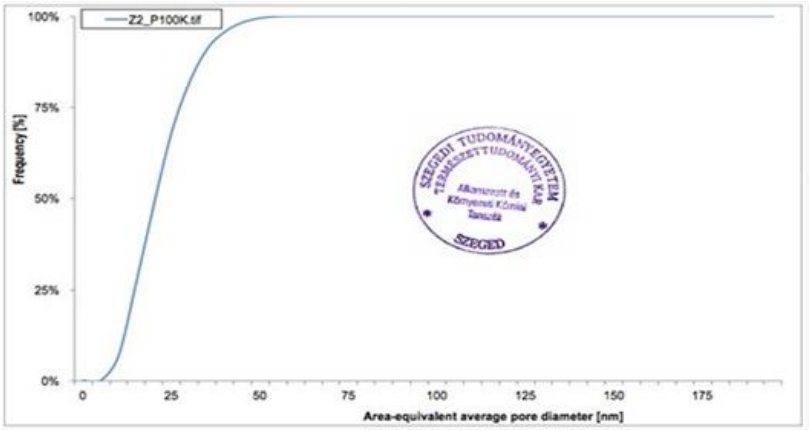
[1] Crated with maximum number of modules

[2] Wet weight of a clean, fully populated cassette. Lower module population will reduce this value. Cassette support method and lifting module can also vary this weight, depending on design. An estimate is used based on several standard designs

[3] Product lifting design weight assumes a fully populated cassette with solids accumulation, standard lifting module and hanging arms. Alternative support and lifting methods could vary this value

Membrane Properties





Membrane Cross-section and 3rd party certified UF pore size

Table 3: Module Dimensions

Application	Product	Width (A) mm (in)	Length (B) mm (in) Header-to-Header	Depth(C) mm (in)
LEAPmbr	TX12	861 (33.9)	2059 (81.0)	51 (2.0)

Table 4: Module Properties

Application	Membrane Surface Area m^2 (ft^2)	Lifting Weight [1] kg (lb)	Material	Nominal Pore Size [2] (µm)	Fiber Diameter [3] (mm)	Surface Properties	Fiber Tensile Strength [4] (N)	Flow Path
LEAPmbr	TX12 49.7 (535)	29 (64)	PVDF	0.04	2.2	Non-ionic & Hydrophilic	>600	Submerged, Outside-In

[1] Clean wet weight excluding any solids accumulation

[2] Nominal pore size is often rounded to 40nm (0.04 micron) for simplicity

[3] Fiber dimensions have been rounded to the nearest decimal place for simplicity

[4] Tensile strength measured using a modification of ASTM protocol (D 3822)

Table 5: Operating & Cleaning Specifications [1]

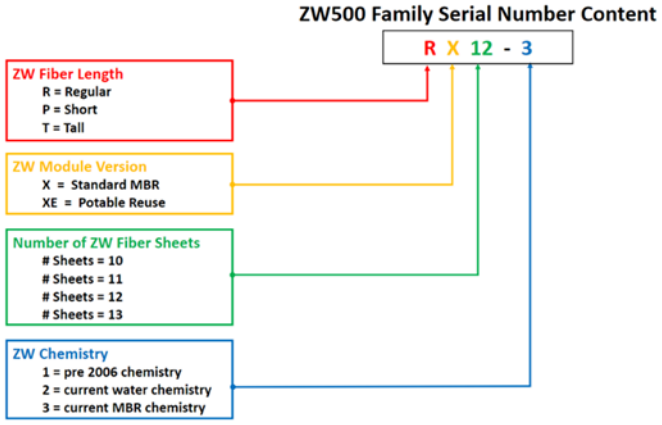
Application	TMP Range kPa (psig)	Typ. Aeration Nm^3/h/cassette (scfm/cassette)[2]	Max. Operating Temp. °C (°F)	Operating pH Range	Backpulse Type	Max. Cleaning Temp. °C (°F)	Cleaning pH Range	Max. lifetime exposure Cl_2 (ppm)
LEAPmbr	-55 to 55 (-8 to +8)	500EV TX12 223-447 (133-265	40 (104)	5.0-9.5	Relax Aeration (Standard) Backpulse-capable (as required)	40 (104)	2.0 – 10.5 (<30°C) 2.0 -10.0 (30-40°C)	1,000,000

[1] Normalized ADF flow for fully populated cassette at 150m ASL, 20°C wastewater temperature. Delivered value at modules will differ based on site conditions. Lower cassette populations will have a lower aeration rate

[2] Aeration rates reflect the variation in LEAP-LOW to LEAP-HIGH aeration

ZeeWeed 500 Series Products

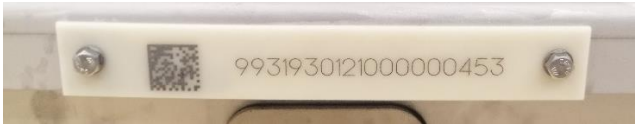
The ZeeWeed 500 series of membranes have been applied to MBR applications since 1997 when the ZW500A was introduced. There are four products within the current 5th generation – the ZW500M (laboratory use), ZW500S, ZW500D and ZW500EV. All ZeeWeed 500 series MBR products use the same PVDF chemistry formulation, designed specifically for membrane bioreactor application.



ZeeWeed 500 Product Identification

All ZeeWeed 500 series products have a product type identification code tied to the product specification. The code provides information on the version of the module, the fiber length, the number of sheets, and the membrane chemistry. It is typically found with the module serial number and takes the format of 1 to 3 letters, a number, and usually, but not always, a dash and third number.

Module Serial Number



Cassette Serial Number