

ZeeWeed* 500 for Large Municipal MBR

FACT SHEET

Experience, Expand, Evolve with ZeeWeed



Addressing the everchanging needs of Municipal customers looking to:

- Lower the CAPEX associated with expanding capacity
- Increase treatment capacity 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 product offering Peace of mind with warranties up to 15 years in duration.

Proven Experience

Nearly 2500 MBRs globally running with ZeeWeed 500 membranes. More than 1.3 million operating modules treating over 27000 MLD (7200 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



Beijing 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)

MDF 25 MLD (6.8 MGD)

Commissioned 2008

Proven membrane life 14 years



Traverse City WWTP, USA

ADF 27 MLD (7.1 MGD)

MDF 64 MLD (17 MGD)

Commissioned 2005

Proven membrane life 16 years



Brescia WWTP, Italy

ADF 30 MLD (8 MGD)

MDF 60 MLD (16 MGD)

Commissioned 2002

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-64M	1,744 (68.7)	2,136 (84.1)	2,735 (107.7)
500D-52M			2,562 (100.9)

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 ⁴
LEAPmbr	EV-64M	64	32	1 x 8" vert. pipe	1 x 3" FNPT half coupling	2,091 (4,610)	2,329 (5,135)	4,536 (10,000)	316L SS frame with engineered plastics
	D-52M	52	26	1 x 6" vert. pipe	1 x 3" FNPT half coupling	1,892 (4,172)	2,184 (4,816)	4,536 (10,000)	

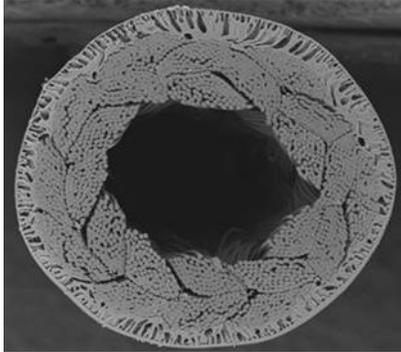
¹ Crated with maximum number of modules

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.

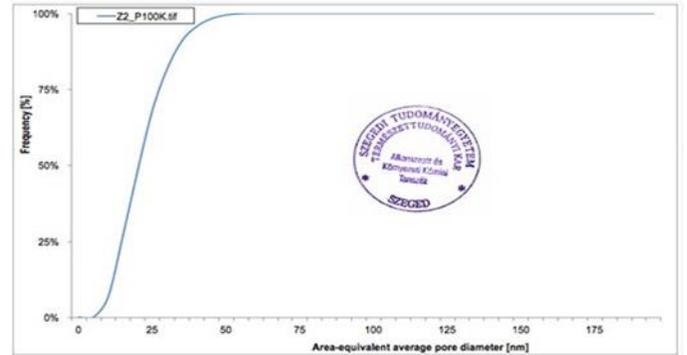
³ Product lifting design weight assumes a fully populated cassette with solids accumulation, standard lifting module and hanging arms. Alternative support and lifting methods could vary this value.

⁴ Alternative grades of stainless steel offered for cassettes are 304L, 2205 and SMO254 as required.

Membrane Properties



Membrane cross-section



3rd party certified UF pore size

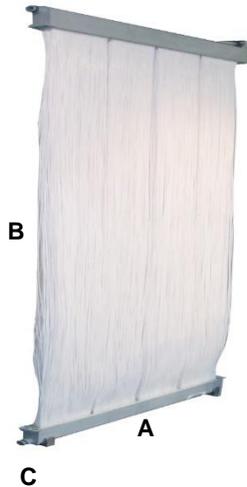


Table 3: module dimensions

Application	Product	Width – A mm (in)	Length - B mm (in) Header- to-Header	Depth – C mm (in)
MBR	500EV	861 (33.9)	2,051 (80.7)	51 (2.0)
	500D	844 (33.2)	1,940 (76.4)	49 (1.9)

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
MBR	500EV 49.2 (530)	29 (64)	PVDF	0.04	2.2	Non-ionic & Hydrophilic	>600	Submerged, Outside-In
	500D 40.0 (430)	28 (61)						

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)	Max. Operating Temp. °C (°F)	Operating pH Range	Backpulse Type	Max. Cleaning Temp. °C (°F)	Cleaning pH Range	Max. lifetime exposure Cl ₂ (ppm)
MBR	-55 to 55 (-8 to +8)	500EV 222-445 Nm ³ /h (132-264 SCFM)	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
		500D 182-363 Nm ³ /h (108-215 SCFM)						

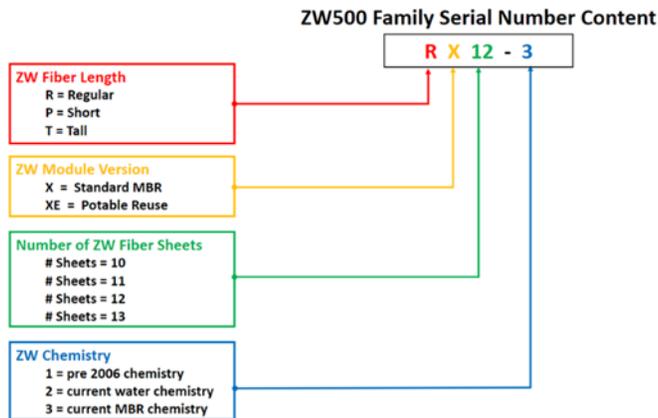
¹ Cassettes can be populated with 26 to 52 modules (500D), or 32 to 64 modules (500EV). Normalized ADF flow for fully populated cassette at 150m ASL, 20°C wastewater temperature. Delivered value at modules will differ based on site conditions. Lower cassette populations will have a lower aeration rate.

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.



Contact Us

If you would like to learn more about how Veolia can provide MBR solutions for your large municipal projects, contact your Veolia representative or visit our website.

Veolia Water Technologies
Please contact us via:
www.veoliawatertechnologies.com