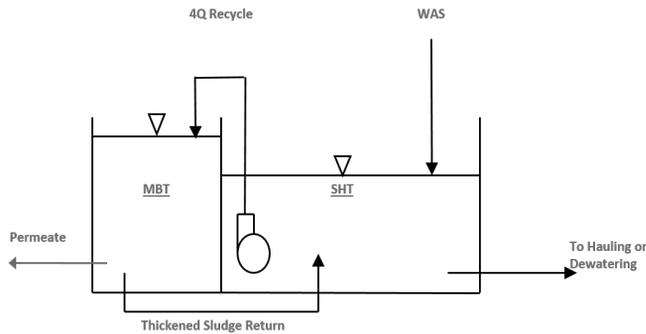


For Earth, For Life  
Kubota



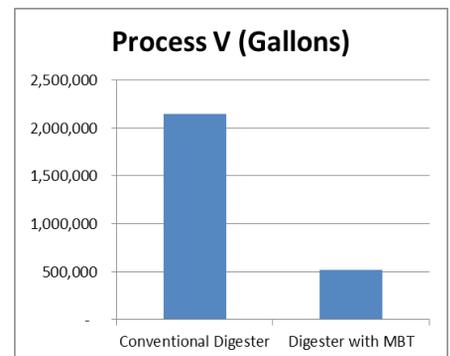
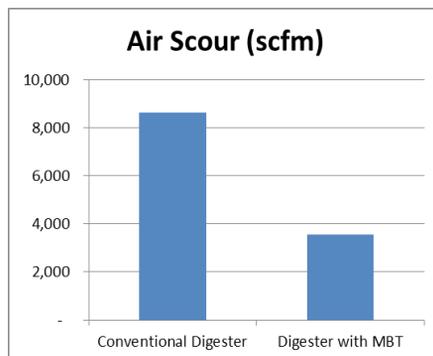
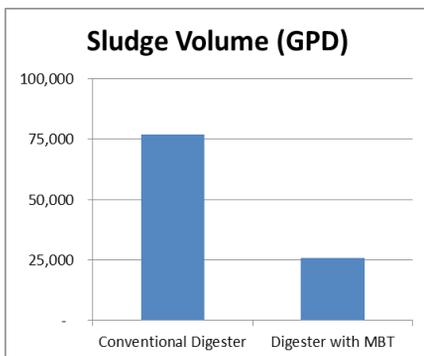
**KUBOTA Membrane Thickening (MBT)**

## Process Flow Diagram



## Advantages of the KUBOTA MBT

1. Simple and Reliable Design
2. Small Footprint
3. No Polymer for thickening
4. Minimal Operation/Maintenance requirements
5. Cost effective
6. Rapid ROI for owners who liquid haul
7. High quality permeate
8. Utilizes the same membrane as your Kubota MBR



1% Conventional Digester vs 3.5% MBT + Digester



## Case Study : Piedmont SC



- Commissioned Dec. 2012
- MBR + MBT (with 2 x Aerobic Digesters)
- MBT thickens the sludge from 1% up to 4.5%

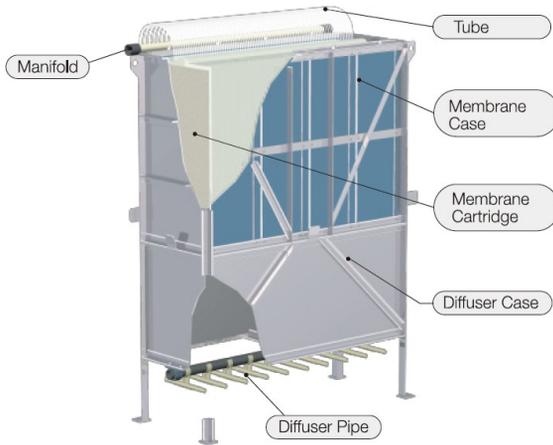
## Case Study : Lake of the Pines CA



- Commissioned in 2008
- MBR + MBT (with 2 x Aerobic Digesters)
- MBT thickens the sludge from 1% up to 2.5~4%

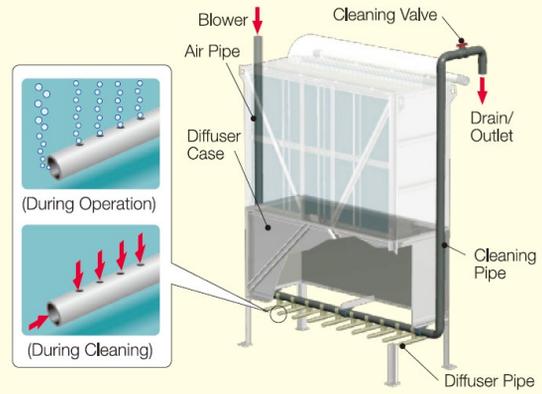
# Structure of the Membrane Unit

The membrane unit consists of a membrane case (upper) and a diffuser case (lower). The membrane case houses multiple membrane cartridges that are connected to a manifold pipe via transparent tubes, while the diffuser case houses a coarse bubble diffuser. You can remove individual membrane cartridges for easy maintenance work.



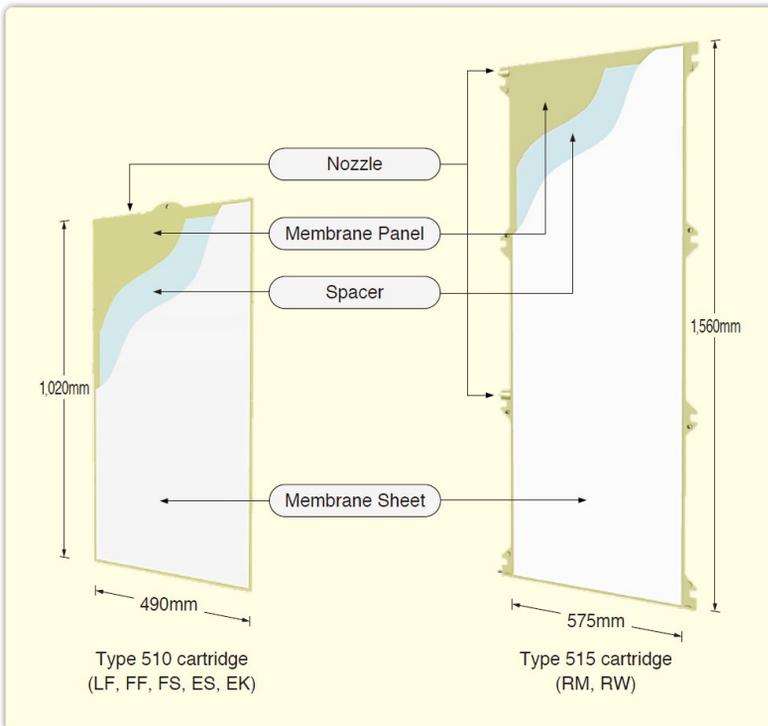
## Diffuser Cleaning: Easy maintenance with unique system

During normal aeration, the cleaning valve is closed, forcing air out of the diffuser. When the cleaning valve is opened, the diffuser system is flushed with a backflow of mixed liquor and air. If an automated valve is installed, this operation can be performed automatically.

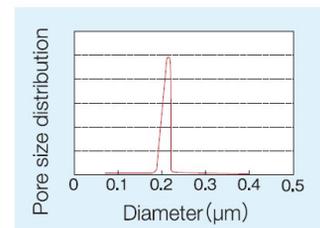
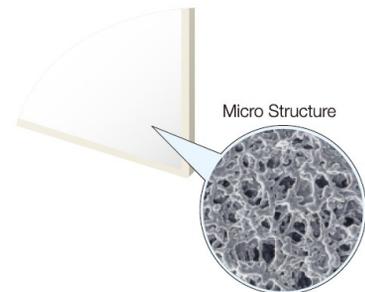


# Structure of the Membrane Cartridge

The membrane sheet is welded on each side of the membrane panel. Treated water permeates through the membrane sheets and spacers to exit the cartridge through the nozzle. Type 515 cartridge has two (2) nozzles. The placement of these nozzles allows equal permeation across the membrane sheet's surface, helping to prevent uneven fouling.

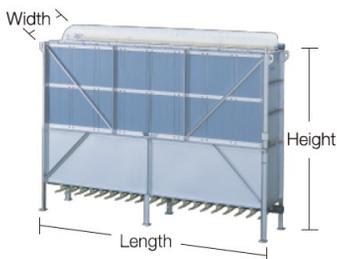


The membrane sheet is made from chlorinated polyethylene and has a maximum pore size of 0.4  $\mu\text{m}$  (average: 0.2  $\mu\text{m}$ ).

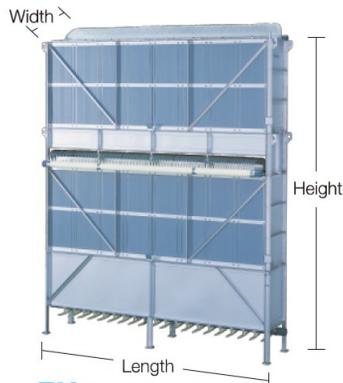


# Multiple Products

Unit Type		Total Membrane Surface Area		Nominal Dimensions						Weight (dry)	
				Height		Width		Length			
		(m <sup>2</sup> )	(ft <sup>2</sup> )	(mm)	(ft)	(mm)	(ft)	(mm)	(ft)	(kg)	(lbs)
LF	10	8	86	1,300	4.27	512	1.68	150	0.49	50	110
FF	25	20	215	1,526	5.01	600	1.97	442	1.45	140	309
	50	40	431					792	2.60	220	485
FS	50	40	431	1,526	5.01	600	1.97	792	2.60	225	496
	75	60	646					1,142	3.75	310	683
ES	75	60	646	2,026	6.65	600	1.97	1,142	3.75	330	728
	100	80	861					1,492	4.90	430	948
	125	100	1,076					1,842	6.04	530	1,168
	150	120	1,292					2,201	7.22	630	1,389
	200	160	1,722			620	2.03	2,921	9.58	860	1,896
EK	300	240	2,583	3,506	11.50	600	1.97	2,201	7.22	1,220	2,690
	400	320	3,444			620	2.03	2,921	9.58	1,670	3,682
RM	150	218	2,347	2,490	8.17	575	1.89	2,251	7.39	1,070	2,359
	200	290	3,122					2,925	9.60	1,365	3,009
RW	300	435	4,682	4,290	14.07	575	1.89	2,251	7.39	2,070	4,564
	400	580	6,243					2,925	9.60	2,635	5,809



**ES type**



**EK type**



**RW type**

Kubota SMU models in all illustrations are with pickling treatment. Kubota SMU design and specifications are subject to change without notice.

\*KUBOTA Submerged Membrane Unit® is a registered trademark of KUBOTA Corporation in Australia, Benelux, China, Germany, Spain, France, U.K., Hong Kong, Israel, Italy, Turkey and USA.

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