

AERATED TREATMENT WETLAND

DESCRIPTION

Aerated treatment wetlands are an advanced type of treatment wetlands that allow more efficient removal of contaminants from wastewater owing to the higher availability of oxygen. This subsurface flow system is aerated mechanically from below with an appropriate air distribution system. It is ideal for treating wastewater with high loads of organic matter, or stringent outlet requirements, while minimizing

the footprint of the treatment wetland. This type of treatment wetland can be installed on a vertical or horizontal filter, or even on more recent technologies equipped to deal with raw wastewater, such as in the French system. Besides filtration processes, aeration controls the environment to ensure microbial activity under aerobic and anoxic conditions according to treatment objectives.



Example of a vertical flow aerated treatment wetland

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|---|-------------------------------------|
| 1- Influent (primary treatment needed) | 6- Aeration system |
| 2- The stems penetrate the organic deposit and prevent clogging | 7- Blower (air distribution system) |
| 3- Coarse gravel | 8- Waterproof liner |
| 4- Saturated layer | 9- Original soil |
| 5- Drainage system | 10- Effluent (treated wastewater) |









TYPE OF INFLUENT

The influent can be pre-treated wastewater for classic vertical or horizontal aerated systems (at least a decantation step) or raw wastewater when implementing a specific design (e.g. Rhizosph'air© process). Can be combined with other treatment stages depending on outlet requirements (TN, pathogen, etc.).

TREATMENT EFFICIENCY

COD	BOD ₅	TSS	TN	NH ₄ -N	TP
>90%	~90%	95%	15 – 80 % according to design and aera- tion strategies	>90%	20 – 30 %

ADVANTAGES / DISADVANTAGES

ADVANTAGES		DISADVANTAGES
Possible to operate in separate and combined sewer systems		
High tolerance of occasional hydraulic and organic load fluctuations		
Lower risk of clogging than horizontal flow treatment wetlands		
		Additional energy consumption, operation and maintenance due to the aeration system. Use of technology that may require electromechanical expertise
No specific hazard of mosquito breeding		
Lower land requirement than horizontal flow systems		Deeper earth excavation than vertical or horizontal flow systems
Reuse potential for irrigation and at building scale (toilet flushing, etc.) with additional disinfection steps		
		Plants harvesting once or twice a year
Flexible in design and treatment performance depending on the capacity of the air distribution system and on the aeration frequency	