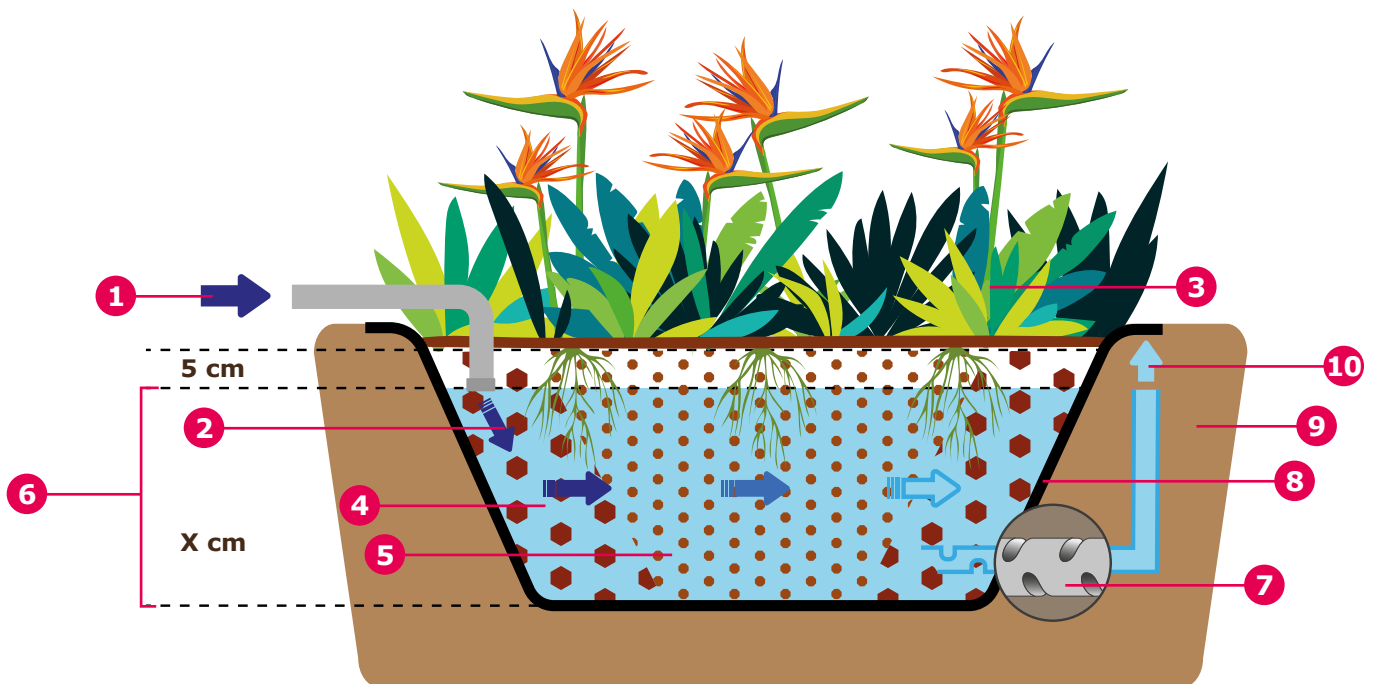


HORIZONTAL FLOW TREATMENT WETLAND

DESCRIPTION

Horizontal flow treatment wetlands consist of gravel beds planted with emergent wetland vegetation promoting horizontal flow through the filter media, a single layer of gravel. The media are fully saturated with water which can create an anoxic environment, maintaining a subsurface flow. Particles are retained by

sedimentation or filtration; solubles are partly absorbed abiotically or biotically. Further transformation and degradation of the retained substances occurs owing to chemical and mainly biological processes in the filter media. The root zone provides a highly active environment for biofilm attachment.



1- Influent (primary treated wastewater)

2- The supply pipe distributes the water over the entire filter

3- The stems penetrate the organic deposit and prevent clogging

4- Coarse gravel

5- Medium gravel (as in a transition layer)

6- Saturated layer

7- Drainage system

8- Waterproof liner

9- Original soil

10- Effluent (treated wastewater)











TYPE OF INFLUENT

Horizontal flow treatment wetlands are used for secondary or tertiary treatment. They can be installed following a French vertical flow treatment wetland or a septic tank, depending on the treatment goal.

TREATMENT EFFICIENCY

COD	BOD ₅	TSS	TN	NH ₄ -N	TP
60–80%	~65%	>75%	30–50%	20–40%	10–50%

ADVANTAGES / DISADVANTAGES

ADVANTAGES		DISADVANTAGES
		Need for fine gravel
		Need for primary treatment
Possible operation in separate and combined sewer systems		
		Sensitive to hydraulic and organic overloads
		Less robust than vertical flow treatment wetlands
Possible low energy usage (feeding by gravity)		
No specific hazard of mosquito breeding		
		Higher land requirement than vertical flow systems
Reuse potential (irrigation) with additional disinfection step		
		Plants harvesting once or twice a year