

Constructed wetlands for natural wastewater treatment

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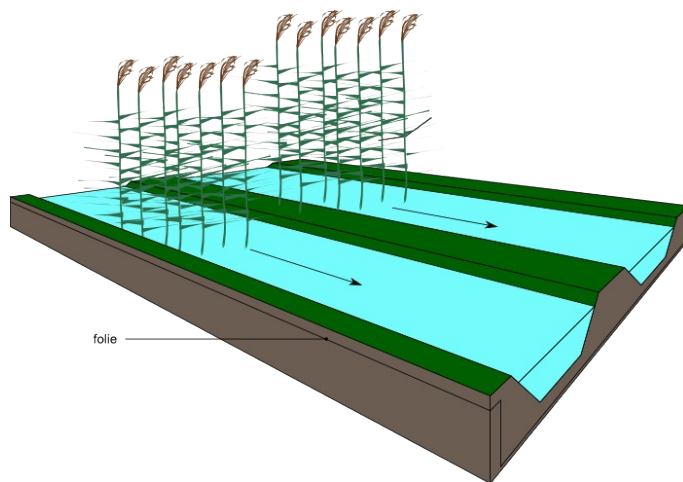
Topics:

- 🌿 Classical types of constructed wetlands (FWS, HSSF, VF)
- 🌿 Intensification by aeration (Phytocube®, Phytoair®)
- 🌿 Multifunctional surface (Phytoparking®)
- 🌿 Integration raw waste water treatment and aeration: Rhizosph'air®

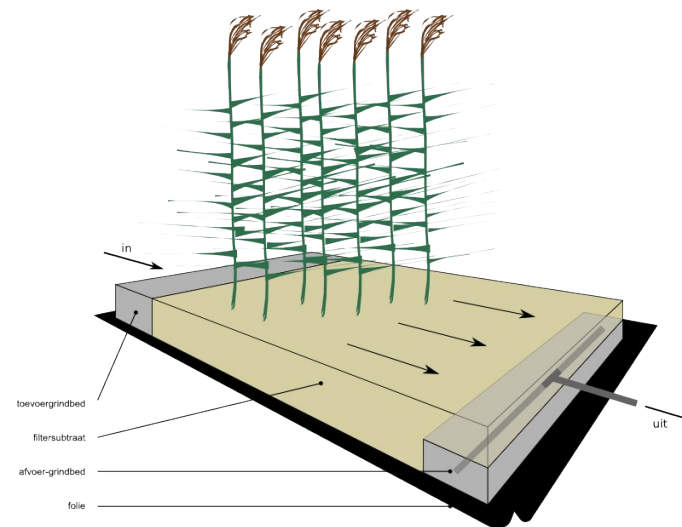
Classical types of constructed wetlands



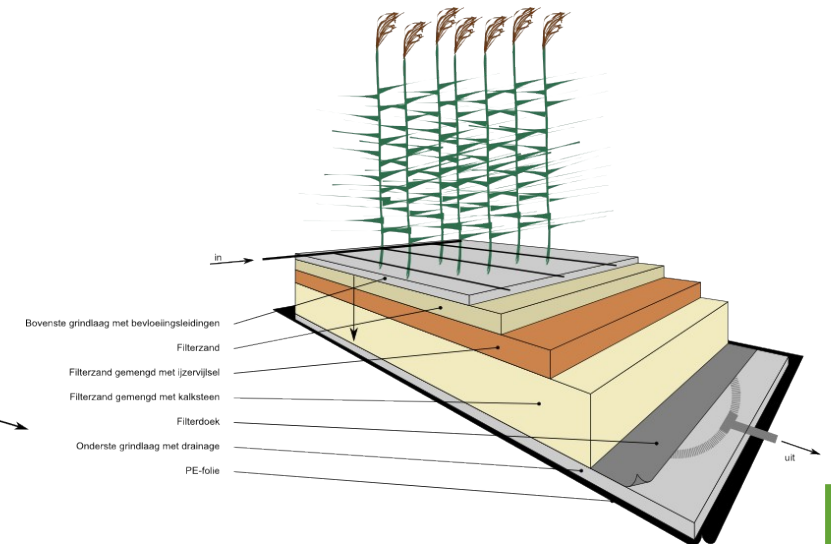
FWS



HSSF



VF



Aerated constructed wetlands



Phytoair®



Phytoparking®



Phytocube®



Phytoair®



Phytoair aerated constructed wetland (ACW)

- Patent Naturally Wallace Consulting (USA) – Forced Bed Aeration
- 0,75 m² in stead of 3 m² per PE = factor 4 smaller
- Intermittent aeration: better TN-removal
- Flexible: fixed water level (underload) and adaptable aeration (peak loads)



Example strawberry farm, Zundert, the Netherlands



	Influent	Effluent	Unit	Rem. %
Temp.	14.5	15.00	°C	-
pH	7	8.30		-
SS	140	8.30	mg/l	94%
COD	410	17.00	mg/l	96%
BOD	150	<1.0	mg/l	100%
TOD	620.7	20.43	mg/l	97%
N-Kj	46.1	0.75	mg/l	98%
NH ₄ ⁺ -N	38.5	<0.0300	mg/l	-
NO ₃ -N	0.0334	17.10	mg/l	-
TN	46	18.00	mg/l	61%
TP	6.0	1.10	mg/l	82%

Aertbei – Zundert

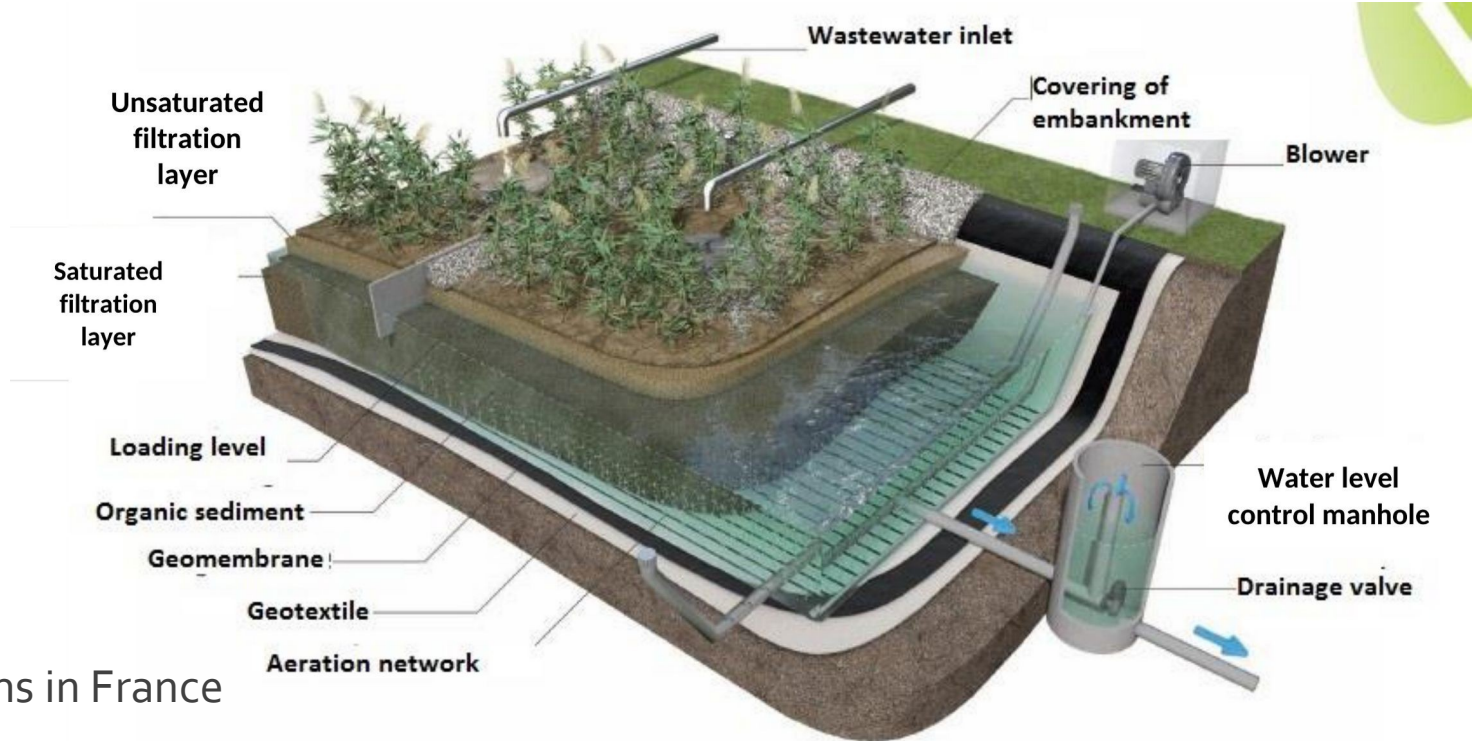
Examples Kunshan – Suzhou, China (in cooperation with DeHua Eco-tech)



Raw waste water: Rhizosph'air®

Patent Rietland / NCW / Syntea

Raw waste water direct to filter



- > 2.000 raw waste water treatment systems in France
- No methane-production in pretreatment
- No (big) septic tank needed for large systems
- Sludge decomposes on top of the filter.
- Rhizosph'air = Raw waste water treatment + aeration
- Surface area only 1 m² per PE

Thank you for your attention!



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