

demEAUmed Technologies

vertECO: constructed vertical ecosystem

Eight categories of innovative technologies together with a monitoring, control and decision support system are integrated and demonstrated in real life situation within the European project demEAUmed "demonstrating integrated innovative technologies for an optimal and safe closed water cycle in Mediterranean tourist facilities." This factsheet presents one of these eight technologies; the **vertECO: constructed vertical ecosystem** technology.

Description

This technology treats grey water through an indoor vertical constructed plant-based wetland. The underlying principle is the employment of certain plant species in a special sequence for cleansing of the polluted water, grey water in this case; hence, improving the water quality which enables a reuse of the treated water.

The investigated plant species function in symbiosis with rhizosphere specific microorganisms providing intrinsic water cleaning abilities.

For the constructed plant based wetland, a vertical set-up is employed combined with a subsurface horizontal flow. An approach with a green wall unit with three meters length employed for a grey water pollution level of tourist facilities revealed already very promising results.



Applicability

The vertical ecosystem is used for the treatment of:

- Greywater,
- Shower water and
- Laundry water.

This technology effluent, according to parameters of Spanish legislations, can be used for:

- Toilet flushing,
- Golf irrigation,
- Private garden irrigation,
- Groundwater recharge and
- Laundry.

Design Criteria **For demEAUmed**

Size

1,5 m (w) x 5m (l) x 2,8m (h)
Indoor/ semi-indoor, light conditions

Location

At the pool bar in the back (demEAUmed demonstration).

Flows

0,5-1,5 m³/d semi-continuous batch.

Vegetation

Different species of marshplants (e.g. Typha, Iris), graminoids (Carex, Cyperus) tropical and subtropical plants (e.g. Ficus, Spathiphyllum, Epiprenum)

Operation and Maintenance

A gardener is needed to take care of the vertical ecosystem.

Advantages of vertical ecosystem:

- Water savings,
- Aesthetic value,
- Clean air,
- Green image and
- Visualizing water cycles.

Costs issues (or additional value)

- Comprehensibility of ecosystem services,
- Aesthetic value,
- Improve the indoor environment and
- Positive effects on well-being.

Contact:

vertECO: constructed vertical ecosystem Supplier:

alchemia nova

Phone: (+43)-1-810 1000

Fax: (+43)-1-810 1000-10

Email: office@alchemia-nova.net

Please find further information and updates on demEAUmed project, its technologies and DSS at: www.demeaumed.eu



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