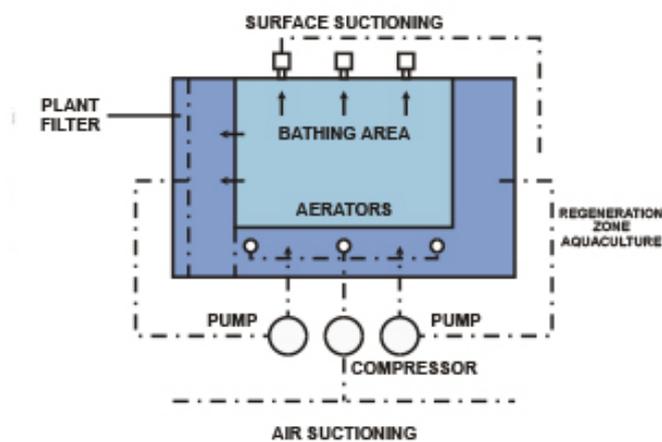


How the Gargazon Natural Bath works

This is how the ecological balance works in the natural bathing ponds

A natural swimming pond is an artificially established body of water with near-natural conditions. It is divided into a bathing area and a regeneration zone (filter area) containing plant life. The bathing area is available for swimming. The purpose of the regeneration zone is to purify the water. The surface areas of the bathing area and the regeneration zone are approximately equal; they are generally separated under water by earthworks or walls, or they are located in two separate basins (two-chamber system). These design features enable the two areas to be separately maintained and emptied, and also serve as a barrier for the guests. On the surface of the water, buoys or floats mark the demarcation line. The bathing guests enter the bathing area via wooden piers, steps, or other access devices like in a conventional swimming pool. Shallow pebble beaches may also be used. The base of the entire pond is sealed, so there is no danger of groundwater entering the facility.



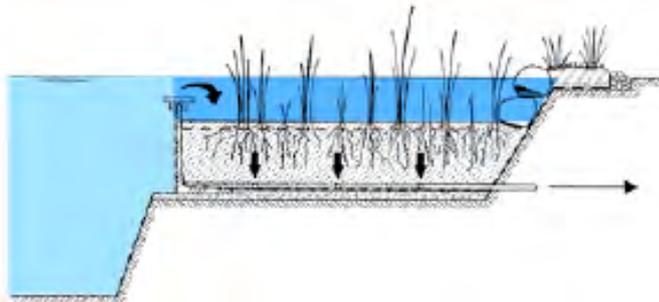
picture: WasserWerkstatt Bamberg

The Plant Filtration System

The plant filtration system consists of a planted filter bed filled with a special filter substrate. The water flows slowly through the planted soil from the top to the bottom and is thus purified naturally:

- The pores of the plant filter are so fine that even tiny particles suspended in the water are filtered out – without harming the important zooplankton.
- A biofilm forms on the surface of the granulated matter in the filter. This biofilm decomposes organic contaminations.
- Bacteria and pathogens are effectively removed from the water.
- The plant roots ensure that the filter substrate remains sufficiently permeable.
- It is not necessary to change the filter substrate since the nutrients released by the biological purification process are absorbed by the plants and contribute to their growth.

This plant filter passage is very effective in smoothing out peaks in contamination.



picture: WasserWerkstatt Bamberg – schematic diagram of the plant filter

Self-Purification Process

The natural bathing ponds exploit the self-purification mechanisms found in nature. These are very complex processes: The water plants and algae absorb nutrients dissolved in the water and, using sunlight as an energy source, assimilate them into their biomass. The oxygen they generate in doing so is released into the water. The filtering zooplankton in the water subsists on the suspended algae. One familiar example of the zooplankton is the water flea. They strain the water with their mandibles and thus ingest particles of nutrients (algae), while also absorbing oxygen. Their metabolism is so rapid that they entire body of water is cycled through their bodies up to 1.7 times a day. Water fleas thus represent a living filter unit, and they keep the water free of suspended particles. We make every effort to protect them in the small bathing ponds. This is also the reason that we have not stocked the water with fish. Fish eat zooplankton and thus have a negative effect upon the water quality of small bathing ponds.

Dead organic material (detritus) is formed at all levels of the food cycle described above. This matter is fed upon by bacteria and fungi. They mineralize the detritus and thus supply the phytoplankton with nutrients in an absorbable form. This completes the food cycle.

The application of additional biological self-purification mechanisms and the use of technical equipment for specific tasks make it possible for us to maintain a high level of water quality without the use of chemical agents.



Water Plants

The water plants are located in the regeneration zone and in the plant filter. They have an important role in this system.

On water's edge, the reeds protect the shore from erosion. Farther out from the reeds, such floating pond plants as lily pads can be found. Still farther out, in the deep water zone, there are underwater plants which help check the growth of the algae. They absorb nutrients via their leaves and keep the concentration of nutrients in the water to an acceptable level; further, while assimilating these nutrients, they release oxygen into the water, ensuring that it is adequately oxygenated. Finally, the underwater plants have a sanitizing function: With their leaves, they increase the surface area available for settlement by microorganisms and thus increase bacterial decomposition in the water.

The species of plants which have been selected reflect the natural plant societies found in bodies of water in our region. The aeration of the water promotes the growth of these underwater plants.

source: WasserWerkstatt Bamberg: www.wasserwerkstatt.com