

TAKE THE PLUNGE

Healthy, good-looking, environmentally friendly and financially savvy, natural swimming pools are an increasingly attractive option to spa operators looking to stand out from the crowd

Older generations may still recall the simple pleasure of swimming in the countryside, in a lake, river or pond. In today's world, however, such activities are greatly limited, thanks to urban development, pollution, health and safety concerns, and trespass laws.

Resort and spa operators who want to create a unique selling point – while also helping to protect and conserve the environment – can now recreate this experience for their guests through the construction of natural swimming pools based on the ponds and pools once found so abundantly in the landscape.

Natural swimming pools were originally developed in Austria, where the health and wellness benefits of bathing in natural waters in the country's spa towns were widely recognised. In 1985, the first commercial models were created by the Austrian company Biotop, whose founder Peter Petrich came up with the idea of a self-cleaning biosystem for swimming ponds. Other manufacturers, including

Bioteich of Switzerland and Bionova of Germany, soon followed.

Although most of the world's natural swimming pools are currently privately owned, an increasing number of hospitality operators are recognising the benefits of investing in this type of facility. The UK's first commercial natural pool opened last year at a spa in the Cotswolds (see p70).

HOW THEY WORK

Put simply, a natural swimming pool is a man-made pond, designed to benefit people and wildlife. Every natural swimming pool comprises a chemical-free swimming zone and an aquatic plant garden, known as the regeneration zone. Intertwined and mutually dependent, the two zones merge to create an ecologically balanced, self-cleaning environment, combining the natural cleaning properties of plants with filtration and skimming systems (the latter is used to draw scum from surface of the pool).

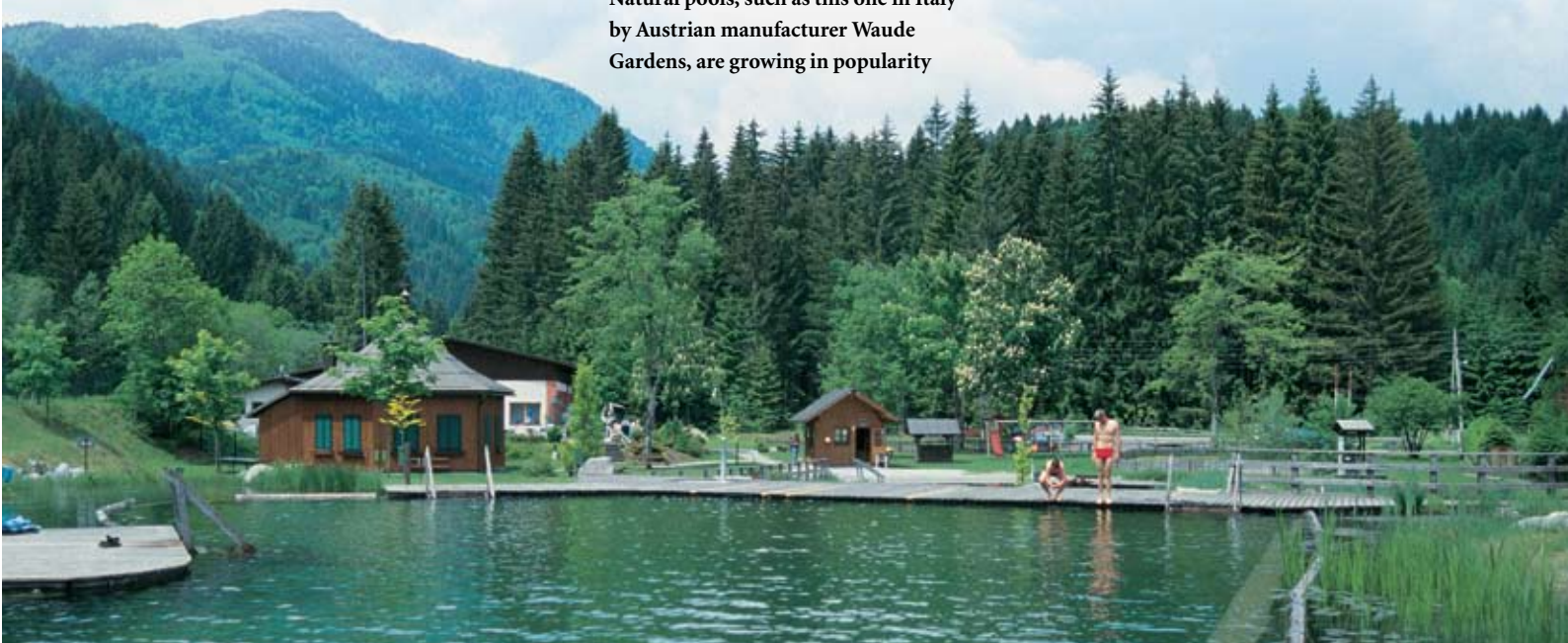
The result is a clean, chemical-free swimming environment. The water is clear but not sterilised, as in the traditional

swimming pool, and it is able to sustain the normal range of pond life, microscopic organisms, invertebrates and even frogs and toads; aquatic flora and fauna are indicators of the state of the environment and their wider disappearance is very worrying.

The swimming zone is from 1.2 to 2.4m deep and is plant-free. It is usually lined with a rubber liner to prevent water leakage and is separated from the regeneration zone by a barrier wall. This wall prevents the invasion of plants and substrate (material at the bottom of the pool) and makes it easier to service and drain each zone separately. The wall terminates around a quarter of a metre below the surface of the pool to allow free transfer of water between the zones.

Within the regeneration zone, the water is cleaned biologically by a combination of aquatic plants and micro-organisms, which break down organic waste into substances the plants can use as nutrients. Acting as a natural filter, the plants absorb these decomposing materials, as well as harmful bacteria and pollutants, and convert them into biomass (organic matter), providing

Natural pools, such as this one in Italy by Austrian manufacturer Waude Gardens, are growing in popularity





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clean water. Each autumn, when the plants die down, the vegetation can be cut away, along with any residual impurities, allowing the cycle to begin again in the spring.

Aquatic plants help keep the water clear by producing oxygen through photosynthesis, which inhibits the growth of algae. The plants also provide an excellent habitat for zoo plankton, which feeds on single-celled algae, thereby 'filtering' it out of the water. These self-cleaning processes do away with the need for harsh chemicals and there is very little need for maintenance.

Natural swimming pools cannot be heated in the same way as conventional pools, relying instead on the sun. However, as the shallow, warmer water of the regeneration zone circulates with the cooler deeper water of the swimming zone, the overall water temperature is quickly raised. Solar technology is an option providing care is exercised, but cannot be used until the plants have grown to combat the algae.

The first commercial natural swimming pools were created by Austrian company Biotop, which built the pool shown above

PLANTS AND WILDLIFE

The plants are the engine room of the natural swimming pool and are vital for the correct biological functioning of the system. They also provide habitats for wildlife both in and out of the water as well as an attractive visual scene.

Plant groupings vary from area to area, creating a distinctive ecological niche for the locality. This local character should be reflected in the planting design. While the technical factors are of utmost importance, design principles should also be considered, and the wide range of aquatic plants provides considerable opportunities for the creation of a wonderful water garden.

Soon after its creation, the natural swimming pool is inhabited by various kinds of animals, including predatory

insects that feed on mosquito larvae. They stay mostly in the regeneration zone, which serves them well with food and shelter.

Amphibians also use the regeneration zone as a breeding ground. However, people and frogs do not generally swim side by side, as the amphibians migrate before the swimming season commences.

Fish are not allowed in the pool as they cause damage to the water quality and encourage birds such as herons, which could damage the liner. Ducks, geese and other waterfowl are also discouraged as they can contribute pests and diseases.

DESIGN AND CONSTRUCTION

Once you have decided to install a natural swimming pool in your resort or spa, the first step is to employ either a landscape architect or a building contractor which offers an in-house design service. While no design can surpass the one created by nature, the role of the architect is to design



The environmental advantages of natural swimming pools are immense. They are built from eco-friendly materials, provide a protected habitat for wildlife and can even be educational

in a harmonious, ecological manner, with minimal impact on the environment. Start the building process first and the project could destroy the essence of the place.

The basic construction requires an area of at least 1.5 to 2.2m in depth. The swimming zone should have near-vertical walls, waterproofed by a rubber liner with a geotextile underliner. The internal walls should be constructed from sustainable materials, such as recycled plastic, stone, timber or geotextile bags. As they will be acting as a retaining structure for the material and plants in the regeneration zone, they should be carefully engineered.

The water is drawn down through the substrate in the regeneration zone and through perforated pipework to the pump. The water is also taken via the surface skimmer to the pump where it is again filtered before going to the bottom of the swimming zone. The regeneration zone must be of the same size as the swimming area and have an average depth of 30cm of substrate, usually graded from 5 to 45cm.

In some instances, the plants would surround the swimming zone, giving a soft planted margin to the pool. However, in small pools, it is better to plant on one side only in order to avoid a tight, enclosed effect. Where space is at a premium, an alternative is to create a second pool, perhaps uphill of the first, and allow the water to flow between the two locations, possibly via a waterfall.

Swimmers get a sense of joy from using natural pools, such as this one by Biotop

The regeneration zone uses a coarse, inert substrate, such as shingle or gravel – not topsoil or any other growing medium as this would bring high levels of nutrients to the water, which would counteract the cleaning effects of the plants and contribute to the silting process. If the aquatic plants are planted in shingle, they must draw their nutrients from the water itself.

A drainage ditch is constructed around the pool to ensure no water run-off enters it, thereby causing differences in the pH level and water quality. Silt, a combination of decaying vegetation, dust and other detritus, will form in any body of water, but can easily be removed by either a vacuum or bottom drain system. A surface leaf skimmer will remove floating debris.

For those who don't want to build a natural swimming pool from scratch, existing pools can easily be converted providing there is space for regeneration zone, as a separate pool or a subdivision.

HOLISTIC EXPERIENCE

When comparing the cost of a natural swimming pool with a conventional one, many people fail to appreciate the huge differences between them. Conventional pools are relatively straightforward and easy to build and, as such, the initial investment is significantly lower. But with the natural

swimming pool, the client receives not just a swimming pool but a water garden that is beautiful all the year round.

Once built, natural swimming pools are also cheaper to maintain. There are no costs for chemicals, energy expenses are absent or minimal and there are huge savings on water as, unlike the conventional pools, they do not have to be emptied every year.

The environmental advantages are also immense. In addition to the ecological benefits of the savings mentioned above, natural swimming pools are typically built from eco-friendly materials, provide a protected habitat for wildlife and can even serve an educational purpose.

As well as being more aesthetically pleasing and environmentally friendly, natural swimming pools offer health benefits. The chlorine used in conventional pools is a skin irritant, associated with conditions such as eczema, and has also been documented to aggravate asthma.

Chlorinated water also contains chemical compounds called trihalomethanes – resulting from the combination of chlorine with organic compounds in water – which are thought to be carcinogenic.

Aside from the advantages to their physical health, users also report a sense of profound joy from swimming in chemical-free water in a natural environment. With the spa industry's emphasis on providing a holistic experience to its guests, natural swimming pools could be a perfect fit. ●