
PATENTED WATER ACTIVATION



DENKaqua

SPRING WATER IN YOUR HOME

3Quellen® Water Activation

Our 3Quellen technology brings us closer to the dream of fresh spring water. It enables you to activate your mains water using a natural process that requires neither an electrical current nor any additives.

Patented 3Quellen water activation combines three natural methods in one piece of equipment. Mains water is swirled in the 3Quellen device by means of shaped ceramic stones.

Special minerals and ceramic surface structures also affect the water.

Our device is easily installed into the mains water pipe. It is maintenance-free and will keep on working without wear and tear.

3Quellen devices are designed for apartments, houses and businesses.



ABOUT THE WATER

Is clean water enough?

The state ensures that everybody has access to clean drinking water. Water is supplied to our home via the mains water supply. In our modern world, we take it for granted that water is available everywhere. But this luxury comes at a high price.

Our water runs through miles of piping, is compressed by pumps, filtered, and stored in reservoirs. It is domesticated.

In our technological age, knowledge about the complex effects of pure, active water, and the appreciation of this basic element have, in many cases, been lost. Our bodies are mainly made up of water, so this molecule is essential for our organism.

People used to say: “just let the tap run for a little while and the water will taste fresh”. But anybody who has ever tasted water straight from a spring or mountain stream will be able to tell the difference.

What is water?

As a “liquid crystal”, water has a special physical structure. It is created by hydrogen bonds. Many water experts refer to their own observations, which often do not tally with scientifically



proven facts. It is said that water has a “memory” and can save good, as well as harmful, frequency patterns. Even if there is no scientific evidence for them,

the qualities that have been attributed to water for millennia do show one thing: **H₂O is water, but water is more than just H₂O.**

WATER ACTIVATION

Water activation through movement

In the 1920s, water expert Viktor Schauberger observed the ability of water to clean and energise itself through multiple rhythmical movements. He derived wonderful inventions from this discovery. Even though the results of his research are not scientifically proven, we used them as the model for developing our 3Quellen technology. The image of the rushing waters of a mountain stream makes the principle of “activated” water in nature easier to grasp. In our 3Quellen device, we use the built-in shaped ceramic stones to make a whirlpool or vortex in the water.



Water activation through minerals & surface contact

Many scientists have examined crystals, precious stones, quartz, feldspar stone and granite. Minerals are said to provide information about water activation. Homeopathy also points towards this. The precise mechanisms at work here have not yet been confirmed.

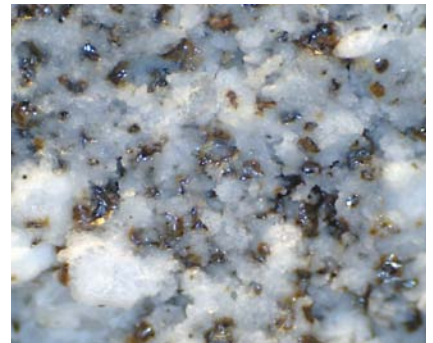
However, there is scientific evidence that the charging properties of water change upon contact with siliceous surfaces (see “Interesting Information”). That is why we make the shaped ceramic stones out of CeraAktiv® ceramic. This ceramic is only available from us. We developed it and we patented it.

CeraAktiv® is composed of special, water-insoluble minerals and silicates.

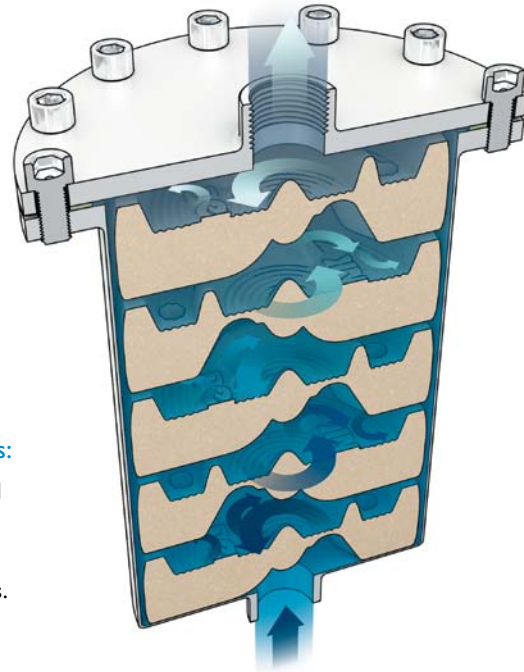


Water activation using EM ceramics

Japanese scientist Prof. Teruo Higa published his thoughts on the use of effective microorganisms (EM) for water activation, for the first time in 1982. He included certain yeast and lactic acid cultures under the term EM. For example, if ceramic clay is enriched with EM, its malleability changes. Water-activating microstructures are said to form, and become firmly established after firing. Even if there is still no scientific proof, EM technology is used in semi-natural agriculture and aquaculture. When we make our shaped stones from CeraAktiv® ceramic, we use EM to create the desired surfaces and structures from the blend of minerals.



THE 3QUELLEN PRINCIPLE



The 3Quellen principle is based on three natural methods:

1. Mains water is compressed, swirled and dynamised by shaped ceramic stones called "Source Stones".
2. Our CeraAktiv® ceramic, which has been specially developed for the Source Stones, is made of selected minerals and crystals. The charging properties of water change upon contact with it.
3. The effective microorganisms (EM) that are added when the Source Stones are manufactured enable the creation of fine surface structures. This further boosts turbulence and the effect of contact.

OUR MOTIVATION



Fabian Denk
Executive partner, Denk Aqua GmbH

Why are we involved in water activation?

Denk Keramik was established in 1964 by my father, Franz Denk. Alongside crockery and decorative objects, the firm also made large ceramic pieces and sculptures. The ceramic raw materials were mixed and delivered preground by a mill, according to our specific instructions. In our workshops, the dry clay mixture was kneaded together with water to make clay and was ready for working after a four-week maturation period. We still work according to this basic principle today.

Ceramics manufacture reached its technical and artistic peak around 2,500 years ago in China, with the discovery of porcelain. These heights have never been reached again since. Large numbers of giant vases and sculptures were made with great mastery. Even today, experts wonder how this was possible without mechanical help and which tricks and techniques the Chinese artists used.

What has been passed on from this time, however, is that ceramicists were mindful of three things:

1. The best clay
2. The best source water for mixing
3. A decades-long maturation period for the clay

Those were the conditions and that was the secret to being able to make extremely difficult ceramic works of art.

In the 1980s my father, a hobby breeder of ornamental fish, used to regularly get water for his aquarium from the nearby Fischbach spring. This small headstream is fed by a hilly landscape of hybrid rock. The water is particularly good for the discus, a beautiful but very sensitive ornamental fish.

During this time, an order came in for ceramic fountain bowls that were a challenge in terms of both size and shape. For the first time, we decided to use the

Fischbach spring water instead of our normal mains water for mixing the clay, as a test.

The results were positive. Clay made with spring water was far easier to work. Its resistance to breakage when unfired was considerably higher and it was much less likely to crack when drying. There was no scientific basis for these findings, but for us as craftsmen it was a tangible reality.

Franz Denk



How do you turn mains water back into spring water?

Although the water analysis values of the Fischbach spring did not differ greatly from our mains water, our reject rate decreased measurably. As it could not be down to the ingredients in the water, there had to be other reasons. These experiences and the considerations that resulted from them were the starting point for our involvement in “water activation”.

The name of the Austrian Viktor Schauburger keeps on cropping up in literature about water activation. At the beginning of the 20th century, he had already developed concepts, according to which water could be activated using certain movements and turbulence. Although there is no scientific evidence for these findings, we thought they seemed comprehensible and logical. We initially based our considerations on these concepts. The device that we wanted to develop should be integrated into the water supply and work by water pressure alone. After two years of experiments and tests we developed a shaped ceramic stone - now called a “Source Stone” - that guides the flow of water to create turbulence.

=> 1st source in the 3Quellen principle.

Active spring water comes from certain high-quality layers of rock. We know about the interaction between water and minerals from homeopathy.

There is no scientific proof for either. However, the change in the charging behaviour of water upon contact with certain mineral surfaces is a scientific fact. On the basis of these considerations, we developed a special ceramic made exclusively from special minerals – it is called CeraAktiv® and it is protected as a trade mark.

=> 2nd source in the 3Quellen principle.

Effective microorganisms (EM) are special, completely harmless lactic acid and yeast cultures. We add them as a natural plasticiser during the manufacturing process for CeraAktiv® ceramic. The EM disappear after firing, but the surface structures remain. This is the third pillar of our development.

=> 3rd source in the 3Quellen principle.

Because our device is based on the three sources (“Quellen”) described (turbulence, minerals and EM), we called our invention 3Quellen®.

3Quellen® is protected as a trade mark.

Source Stones made of CeraAktiv® ceramic



Developed for our workshops in 1998

We put our first 3Quellen device into use in 1998. It was built into the water pipe and still supplies our own materials preparation today. The results surpassed the water from the Fischbach source.

3Quellen water makes many of our extremely intricate and complex ceramic pieces easier to produce. Indeed, some of them are only possible with this water.

A few years later, we installed 3Quellen devices into our own homes. It turned out that our 3Quellen system also had many interesting effects in the home and on everyday life.

We were delighted and told friends and family about it. We noticed that people were interested in good water and water activation by the level of interest it generated. In 2008 we decided to bring our 3Quellen device to market and to offer it for private and commercial use. For that purpose, we established the company Denk Aqua and applied for a patent for the 3Quellen device.

The patent as a quality criterion

We thought it was necessary to apply for a patent, on the one hand to protect our invention and, on the other, to document that our water activation process is fundamentally different from others. With the patent, we very consciously wanted

to show that our invention was based on something technical and that it wasn't a "magic" device.

Technical devices are only patentable if they are new, inventive and capable of industrial application. Known processes, pure discoveries or unusable ideas are as unpatentable as devices whose promised effects contradict the laws of nature.

Our invention is protected by law under patent no. DE 10 2009 003 162.6.

Is water activation according to the 3Quellen principle scientifically measurable?

We looked for reliable scientific testing methods to give definite values for our devices. However, this involved basic research that hadn't been done yet. We hope that scientific interest in this aspect of water will grow in this respect.

Some very interesting findings have been made by the Max-Planck Institute for Polymer Research in Mainz, Germany. One research group was able to demonstrate changes in water chemistry as a result of contact with solid siliceous surfaces.

The results were published in June 2014 in the well-known "Science" journal and can point to how the 3Quellen technology works (see also "Interesting Information").

See for yourself

Sensation and taste are always individual. We are so convinced by the 3Quellen system that we offer our customers a 6-month return policy after installation. This allows each customer to experience and discover activated water themselves without being blinded by their initial euphoria.

Who buys 3Quellen devices?

One of our first customers was a bakery. As well as the private house, the café run by the bakery was then also fitted with a device.

Our devices are used in catering, brewing, and in a well-known German mineral fountain, along with other water-intensive businesses. Our private customers have 3Quellen devices in apartments, houses and residential complexes, in Germany and abroad.



INTERESTING INFORMATION

Using 3Quellen devices in conjunction with water filters or decalcification systems

Our 3Quellen devices are for water activation and are not filtration or decalcification systems. Some of our customers would also like to filter or decalcify their mains water. A range of special devices and technologies are available on the market for this purpose. In principle, the following applies: Filtration or decalcification has a mechanical and/or physical effect on the water. This can easily be established by doing a taste test. Filtered or decalcified water usually tastes flat and dull. This is where using a 3Quellen device at the same time can be beneficial.

3Quellen devices can be combined with any type of filter or decalcification device. We recommend fitting the 3Quellen device after the filter (in the direction of flow).

If only drinking water is to be filtered, e.g. water from the tap in the kitchen, the 3Quellen device can be integrated into the mains water pipe as normal.

If you want to install a water decalcification device, you should test the effects of the 3Quellen device first. You might not need to add a decalcification device.

Calcium carbonate crystal nucleation

The process of “crystal nucleation” is described as a heterogeneous catalysis.

In this process, a catalyst surface causes the formation of tiny calcium carbonate crystals in the water. The current causes the calcium carbonate crystals to become detached and wash away.

It is possible to observe how calcium carbonate is bound differently in 3Quellen water. However, there is no scientific evidence for this. Nonetheless, “crystal nucleation” points to the processes that might be at work in the 3Quellen device.

The charging properties of water change upon contact with minerals

A research group at the Max-Planck Institute for Polymer Research in Mainz was able to prove that contact with solid surfaces changes the chemistry of water. The findings were published in June 2014 in the well-known “Science” journal. One of these findings was that the charging properties of flowing water change when it comes into contact with siliceous surfaces.

Could these results explain the effect of the 3Quellen device?

Our Source Stones are made from CeraActiv® ceramic. This ceramic and the minerals in it mainly consist of siliceous compounds. Quartz, feldspar and granite, etc. – all of these minerals are made of siliceous compounds.

Even though this has not yet been scientifically tested in the 3Quellen device, the available findings from research show that the combination of flowing water and special mineral surfaces in our device must result in a change in the charging behaviour of water.

These findings are also important for us, because they show that the effect of our water activation device is based on physical principles.

References:

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Liquid flow along a solid surface reversibly alters interfacial chemistry

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Sensory evaluations

Accredited Food Institute KIN e.V. (www.kin.de) conducted sensory evaluations on our behalf in 2015. The taste of water activated with 3Quellen was compared with conventional mains water in triangle tests.

According to DIN EN ISO 4120 (sensory analysis), the untreated water was recognised as different in 7 out of 7 cases. This means that a significant (unambiguous) difference between the samples can be found according to the principles of analysing triangle tests.

Chemical, physical and microbiological testing

Technical services provider TÜV Rheinland LGA (www.tuv.com) tested the observance of legal requirements in Germany / EU for food contact products, on our behalf. With the best possible result of "0", no deviations from the legal requirements were found in our 3Quellen device.

Quality of the stainless-steel container

The manufacturer of the stainless-steel container is based in Germany and has been certified by the department of materials and welding technology of TÜV

SÜD Industrie Service GmbH. It also meets the requirements of Pressure Equipment Directive 97/23/EC, as well as the extensive quality requirements according to DIN EN ISO 3834-2. The stainless-steel containers are made in Germany.

Confirmation for specialist sanitation businesses in accordance with the German regulation on drinking water

We confirm that, when installed in accordance with standard engineering practice, the device for water activation, manufactured by our firm, corresponds to § 17(1) of the German regulation on drinking water. This confirmation is included with every device and should be passed onto the specialist firm that is doing the installation.

Does the 3Quellen device require DVGW testing?

The German Gas and Water Engineers' Association (DVGW) offers voluntary testing for certain products. Our devices satisfy all necessary legal requirements, so DVGW testing is not required.

Our devices can be installed without reservation.



3QUELLEN MODEL L



Model L

Ø 22 cm | L 30.5 cm | 12 kg

Assembled ready for connection, including wall mount and equipment for mounting. 2 x flange with 1-inch internal thread

This device is for apartments and houses (up to 6 residential units) and medium-sized commercial applications.

We recommend installing several devices in parallel for larger residential units or for larger consumers. We will be happy to advise.

3Quellen devices are made from V4A stainless steel with a constructional wall thickness and seal design capable of withstanding possible constant pressure of up to 6 bar.

The CeraAktiv® ceramic Source Stones are located inside.



3Quellen Model L can be easily installed in any position, by a specialist, depending on the way the pipe runs. The diagram is just for clarification.

The water flow direction is shown on the device and should be observed during assembly.



3Quellen Model L warranty

The devices are designed for long-term, maintenance-free use. The Source Stones do not need to be changed.

The pressure in the water pipes will not change noticeably after installation. The devices are silent.

We provide a 10-year warranty.

If you are not satisfied within the first 6 months, we will refund the purchase price.

3QUELLEN WATER ACTIVATION STATION



Mobile Water Activation Station, consisting of 5 combined 3Quellen devices.
Water flow approx. 25,000 litres / hour.

Made entirely from V4A stainless steel, with special quick couplings for flexible connection and easy cleaning.

This Water Activation Station is in use at a well-known German mineral fountain.

We are happy to provide special solutions on request.

PULSATOR



3Quellen Pulsator

The CeraAktiv® ceramic Pulsator is an easy way to activate your drinking water. The forward and backward rotation of the Pulsator creates a double swirl and transfers kinetic energy into the water.

The Pulsator has been designed for up to 2 litres of water. Fill a container with mains water. Leave the Pulsator in the water for

at least ten minutes. Rotate the Pulsator back and forth for around 20 seconds before drinking.

The function and size of the separately available 3Quellen Pitcher have been designed to perfectly match the 3Quellen Pulsator. The Pitcher's undulating base enhances the effect of activation.



Pulsator | Ø 8 cm | L 31 cm | 260 g

EMCRYSTAL[®]

3Quellen Pitcher

Together with glassmaker Cornelius Réer we have developed the world's first EM glass. EMCrystal[®] can only be made using a hand-blowing technique, in special wooden moulds. Industrial production is not possible. EMCrystal[®] is protected as a trade mark.

The glass of the 3Quellen Pitcher is not industrially smooth, but has a surface structure that is visible to the naked eye. The thick-walled glass is also honeycombed with small and very small chambers. The base is reinforced and curves inwards in a wave. The glass, with its slightly turquoise shimmer, is a high-quality piece of glasswork that looks great on any table.

Just fill the pitcher with mains water.

EMCrystal[®] Glass Pitcher

Ø approx. 18 cm | H 21 cm | 1,1 kg | 2 litres





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