



DeNK *aqua*

PATENTED WATER ACTIVATION



SPRING WATER IN YOUR HOME

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.

In combination with our *3Quellen* devices, we also offer a depth filter for drinking water purification. By means of a coconut membrane, any existing pollutants (such as drug residues, hormones, heavy metals, etc.) can be absorbed without changing the mineral content of your drinking water.



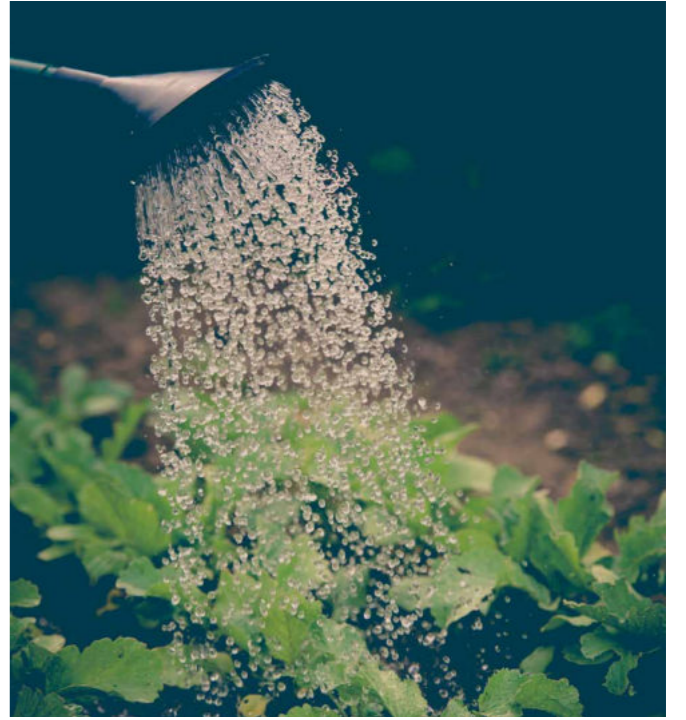
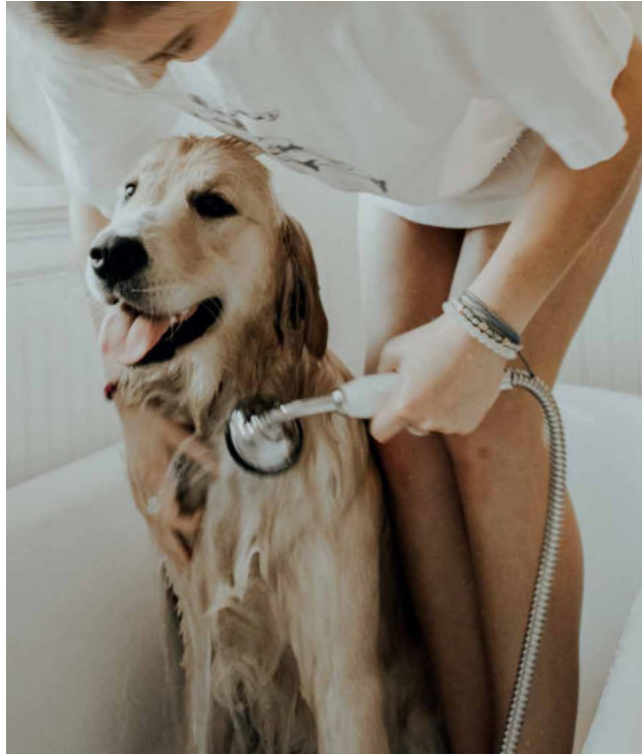
ABOUT WATER

The State is expected to ensure that everybody has access to clean drinking water. Water is supplied to our homes via a 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 something provided to all households as a matter of course. In our technological age, knowledge about the complex effects of pure, active water, and the appreciation of this basic element, has, in many cases, been forgotten. Our bodies are mainly made up of water, and this means that 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.

As a "liquid crystal", water has a special physical structure. It is created by hydrogen bonds. H_2O is a very special molecule that we should start paying more attention to again.



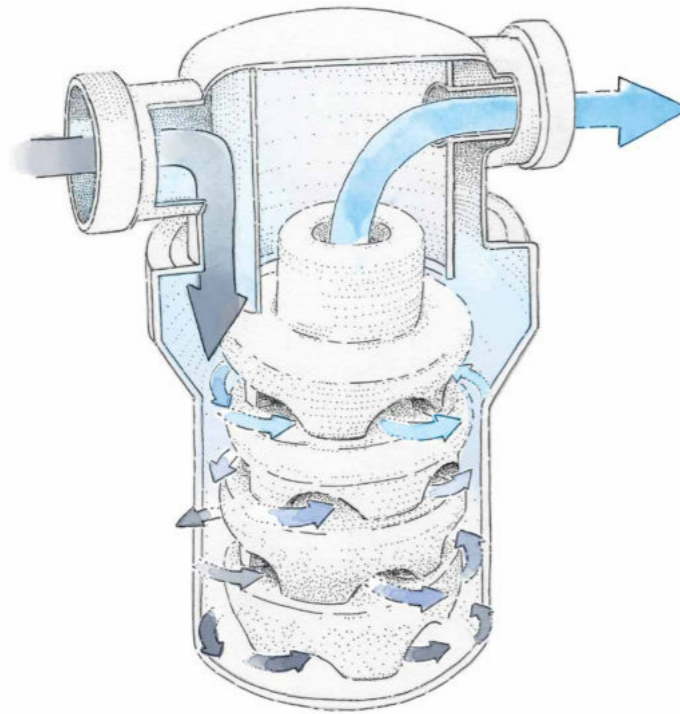
Patented water activation

PATENT: 102009003162, 102014100025, EP2891641

The 3Quellen principle is based on three natural methods:

1 Water activation through movement

The image of 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. This dynamises and activates the water.



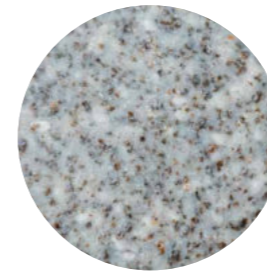
2 Change of charge

When water flows over certain rocks, more happens chemically than was previously assumed. For example, water changes its charge properties on contact with silicate surfaces changes its charge properties. Therefore we manufacture the internal activation cascades from CeraAktiv® ceramics. This ceramic is only available from us, developed by us and is protected for us. CeraAktiv® consists of special water-insoluble silicate minerals, crystals, quartz and feldspar.

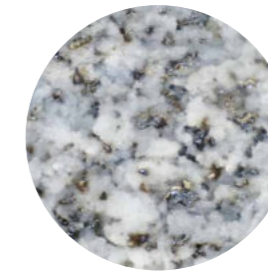


3 Surface maximisation

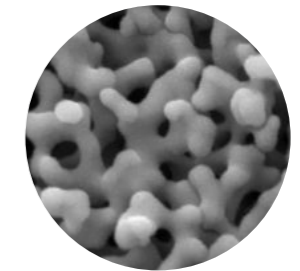
The ceramic shaped stones / activation cascades are produced with our patented Porosium® surface. This makes it possible to create up to 100 m² of surface on one gram of ceramic. In this way, we achieve the smallest structures and maximise the effective surface. The turbulence and the contact effect are optimised.



1:2



1:200



1:1.000.000

Background

Why are we involved in water activation?

Denk Keramik was founded in 1964. In our workshops, dry ceramic earth is kneaded with water to form clay; something which can be processed subject to observation of a four-week maturing period.

In the 1980s, Franz Denk experimented with spring water rather than tap water when mixing clay. This spring water bubbles up from a nearby spring, which is fed by a mixed-rock hilly landscape on the edge of the Thuringian Forest.

The positive result: clay, when mixed with spring water, became much easier to process. Its raw fracture strength was considerably higher and its susceptibility to cracking during the drying period was significantly lower.

And this despite the fact that the chemical water analysis values hardly differed from our tap water. Of course, these findings were not scientifically founded, but for us as craftsmen they were a tangible reality.

With this we began looking for a way to turn our tap water into this spring water – water which bubbles up from a nearby spring, which is fed by a hilly landscape with various rocks that is located on the edge of the Thuringian Forest.

In 2008, after 10 years of successful operation in our factory and in two private homes, we decided to offer the *3Quellen* technology to other users. Since then, *3Quellen* devices have become available for use worldwide: including in homes, workshops, industrial companies and even in a German mineral spring.

The patent as a quality criterion

On the one hand, patenting was necessary for us to protect our invention; on the other hand, it was necessary to document that our invention can only be understood from a technical perspective; it is not an esoteric magic device.

Only technical inventions that are new are inventions which qualify as inventive achievements and are commercially applicable. Known processes, pure discoveries or ideas with no practical application would be just as unpatentable as devices with promised effects that contradict the laws of nature. Examination is carried out by the patent offices in each individual case.

Our inventions are protected by the three patents 102009003162, 102014100025 and EP2891641 in Germany and the European Union respectively.



Things worth knowing

Our partner

We have been working together with the company BBB Gebäudetechnik GmbH since 2018. BBB has specialised in water technology (drinking water, heating water and process water) for more than 20 years. Together we have developed new *3Quellen* models for centralised and decentralised drinking water connections. With the entry model *3Quellen S*, our patented technology has become something within everyone's reach. Today, we are able to offer customised water activation solutions for flats, houses and other water consumers.

Water filters and water activation

When it comes to sustainable water filtration, we find that BBB is a leader in the market. We offer the *WiV[®] Mini* filter, which is compatible with our *3Quellen* devices.

Thanks to a coconut membrane, any harmful substances (e.g. medicaments residues, hormones, heavy metals) can be absorbed, with no changes in the mineral content of the drinking water. This means that all parts processed in the filter are of the highest material quality, and can be recycled – they are indeed environmentally friendly.

Along with the *WiV Mini* filter, designed for decentralised installation at drinking water extraction points, there are also filter systems designed for centralised installation (for real estate, gastronomy and industry) available; something possible through our partner.

The charging properties of water change when it comes into contact with minerals

A research group of the Max-Planck Institute for Polymer Research (in Mainz) was able to detect changes in water chemistry which took place following contact with solid surfaces. The results were published in the renowned specialist magazine „Science“ in June 2014. Among other things, it was determined that the charge properties of flowing water will change when it comes into contact with siliceous surfaces.

CeraAktiv is comprised of special siliceous minerals, crystals, quartz crystals and feldspar rocks which don't dissolve in water.

Bibliography

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Liquid flow along a solid surface reversibly

alters interfacial chemistry

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3Quellen Model S



Decentralised connection to the drinking water extraction point (e.g. kitchen angle valve)

- Patented water activation system with activation cascade made of CeraActiv® ceramic
- For self-installation in any installation position, ready to install with connection set

Housing component made of white polypropylene

H 25 cm, W 11 cm, Ø 11 cm, 0,7 kg

Operating pressure: min. 2 bar – max. 6 bar

Water temperature: 5 – 23 °C

Capacity: unlimited

Flow rate: max. 5 l /min*

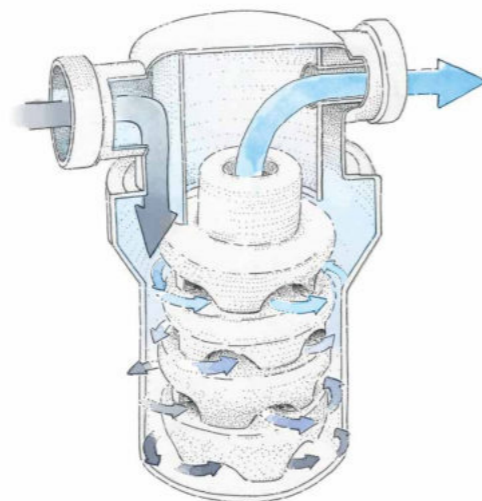
No filtration

Application: drinking water

Connection: 3/8 Zoll AG

Pressure reduction: approx. 0,1 bar*

*The specified values depend on the local water pressure.



Available in the set with the WiV Mini Filter



WiV® Mini Filter



Decentralised connection to the drinking water extraction point (e.g. kitchen angle valve)

- Ideal in combination with 3Quellen water activation solutions
- With coconut membrane – any harmful materials present (e.g. medicaments residues, hormones, heavy metals) can be absorbed without any changes to the respective mineral content of your drinking water
- For self-installation in any installation position, ready to install with connection set
- Filter change easy, with the help of a twist lock
- For installation in flow direction following water activation

Components test: WRAS

H 29 cm, W 10 cm, Ø 10 cm, 0,8 kg

Operating pressure: min. 3 bar – max. 6 bar

Water temperature: 5 – 23 °C

Capacity: approx. 5,000 l* / max. 12 months

Flow rate: max. 5 l/min* with a new cartridge

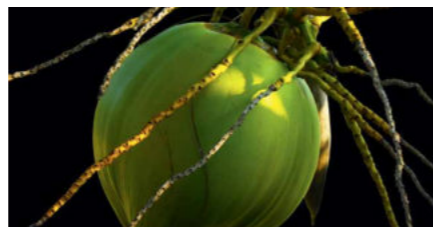
Application: drinking water

Manufacturer: BBB Gebäudetechnik GmbH

Connection: 3/8 Zoll AG

Pressure reduction: approx. 0,3 bar*

*The specified outputs depend on the respective water quality and the local water pressure. The capacity may vary.



3Quellen Model M



For supplying a house
with up to 2 residential units

- Patented water activation system with dual activation cascade and pulsator disc made of *CeraActiv*[®] ceramic
- Central connection to the domestic water pipe (after the central water meter)
- The installation must be carried out by a specialist company, any installation position

Components test: DVGW Reg. nr. NW 9301CQ0351

H 31 cm, W 22.5 cm, Ø 13.5 cm, 3.4 kg

Operating pressure: min. 2 bar – max. 6 bar

Water temperature: 5 – 23 °C

Capacity: unlimited

Flow rate: max. 1.5 m³/h*

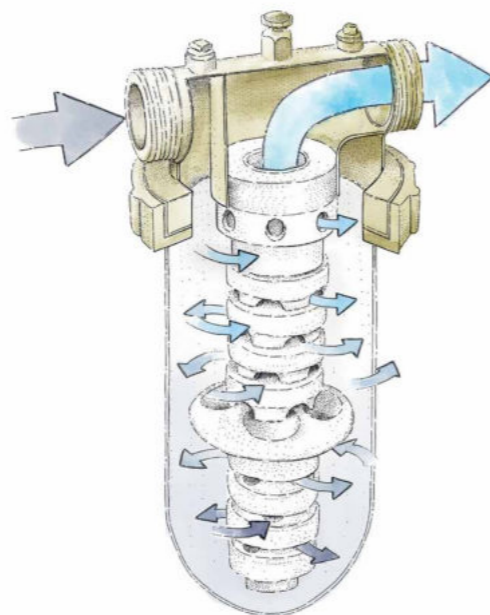
No filtration

Application: drinking water

Connection: R 1 Zoll AG

Pressure reduction: approx. 0.2 bar*

*The specified values depend on the local water pressure.



3Quellen Model L



Able to supply a house
with up to 6 residential units

- Patented water activation with 5 shaped stones made of CeraActiv® ceramic
- V4A stainless steel container with wall bracket
- Central connection to the house water pipe (with the central water meter)
- Installation must be carried out by a specialist company, any installation position

Components test: Pressure Tools Directive 97/27/EG

W 22 cm, L 30.5 cm, Ø 25 cm, 12 kg

Operating pressure: min. 2 bar – max. 8 bar

Water temperature: 5 – 23 °C

Capacity: unlimited

Flow rate: max. 5 m³/h*

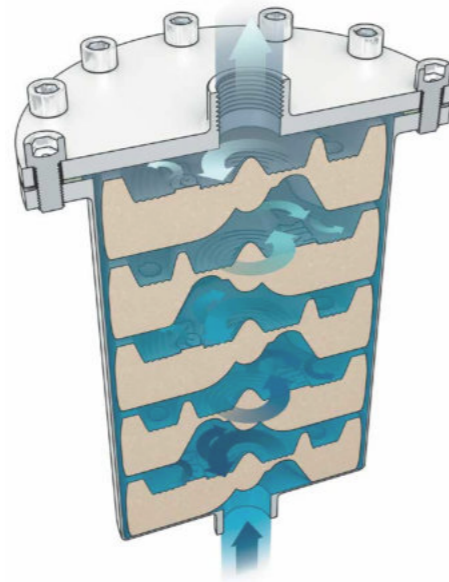
No filtration

Application: drinking water

Connection: R 1 Zoll IG

Pressure reduction: approx. 0.2 bar*

*The specified values depend on the local water pressure.



3Quellen Station



For major water consumers, such as swimming pools, garden centres, the food industry or production

- Patented water activation with 5 combined 3Quellen L devices
- Mobile, manufactured wholly from V4A stainless steel
- Flexible connection through quick couplings

Components test: Pressure Tools Directive 97/27/EG

H 158 cm, W 143 cm, Ø 60 cm, approx. 100 kg

Operating pressure: min. 3 bar – max. 8 bar

Water temperature: 5 – 23 °C

Capacity: unlimited

w rate: max. 25 m³/h*

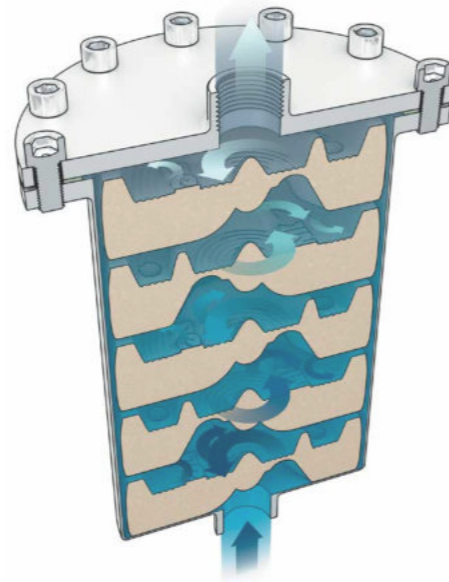
No filtration

Application: drinking water

Connection: quick couplings DN 100

Pressure reduction: approx. 0.8 bar*

*The specified values depend on the local water pressure.



3Quellen Pulsator



Manual water activation device

With the *Pulsator*, made out of *CeraActiv*[®] ceramic, you can summon your drinking water easily – no complications. The forward/backward rotation of the *Pulsator* (like a whisk) produces a double twist, and movement energy is transferred into the water.

The *Pulsator* is designed for water quantities of up to 2 litres. Pour tap water into a container. Leave the *Pulsator* in the water for at least 10 minutes. Before you do any drinking, rotate the *Pulsator* back and forth for approx. 20 seconds.

Rod and screw made of V4A stainless steel

Ø 8 cm, L 31 cm, 260 g

Water temperature: maximum 70°C

Container volume: max. 2 l

Application: drinking water

Cleaning: by hand, with detergent



Tests

Sensory tests

The accredited KIN food institute (www.kin.de) carried out sensory checks on our behalf in 2015, in which the taste of water activated with ordinary tap water was compared with *3Quellen* during triangle checks. In 7 out of 7 cases, the untreated tap water was acknowledged to be different, based on DIN EN ISO 4120. What this means is that, according to the basics of evaluation of triangle tests, there is a significant (clear) difference between the samples.

Chemical, physical & microbiological tests

TÜV Rheinland LGA (www.tuv.com) checked compliance with legal requirements in Germany / EU for products that come into contact with food, on our behalf. With *CeraActiv* ceramics, no deviations from the statutory requirements were determined; hence the best result: „0“.

Use & Safety

Designated application

The products are only suitable for use in the domain of drinking water installations. They are not authorised for use in other domains. Please note that all products in the series are for installation only in cold water lines. In order to obtain deep-cleaned water (*WiV*®) fit for everyday use (e.g. coffee, tea etc.), please call for only cold water from your tap, and not mixed water (e.g. luke-warm water, etc.).

Safety regulations for installation and operation

- The products are state of the art and they meet the recognised safety regulations. Each product is checked for manufacturing errors and safety before delivery.
- Monitor all products for any damage prior to their commissioning.
- The respective locally applicable standards, and installation and hygiene guidelines, must be observed.
- Prior to commissioning, opening the device or changing a cartridge, always depressurise the line / filter.

Notifications

Legal notifications

- All components meet the recognised technology regulations.
- The devices comply with §17 Para. 1 of the Drinking Water Ordinance.
- The ceramic is checked by TÜV / LGA.
- Our inventions are legally protected in Germany and the European Union under patents 102009003162, 102014100025 and EP2891641.
- Denk, *3Quellen*, *CeraActiv*, *Porosium*, *EMCrystal* and *WiV* are legally protected brands.

Disclaimer

The manufacturer shall accept no liability or guarantee for any damage (including subsequent damage) resulting from non-observation of the instructions. The manufacturer, and the sales company, shall not be liable for costs or damages (whether incurred by the user or by third parties) resulting from use of these products, in particular if it's a matter of improper use, misuse, or faults with the water connection or the connected end devices. Neither the manufacturer nor the sales company shall be held liable for improper use. The manufacturer shall not be liable in the case of typos.

Operation installation requirements

- The ambient temperature (from min. 5°C to max. 40°C) may not be lower or higher than the values stated.
- The products must be protected against direct solar radiation and UV light.
- The products may only be installed in frost-proof rooms.
- The products are designed solely for drinking water installation purposes, and only drinking water may flow through them.
- In the interest of proper functioning, the house entrance pressure (from min. 2 to max. 6 bar) may not be lower or higher than the values stated.

Service

Exchange service

The *3Quellen* devices are designed to require no maintenance. The first such device has been in use for more than 20 years. An exchange of the ceramic activation cascade, or the bricks, may become necessary as a result of external influences, pollutants in the water (microdeposits), or heavily calcareous water (from approx. hardness degree 21) or following water pipe work.

With S and M devices, just send us the ceramic activation cascade, securely packaged, for regeneration. You will receive an inexpensive replacement part from us immediately after we have received it.

With an L device, it is necessary to deliver the whole device. We will then exchange the bricks, and send the device back to you within a short time frame.

Natural, durable
materials

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Respect for
people and nature

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Made by hand
in Coburg

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