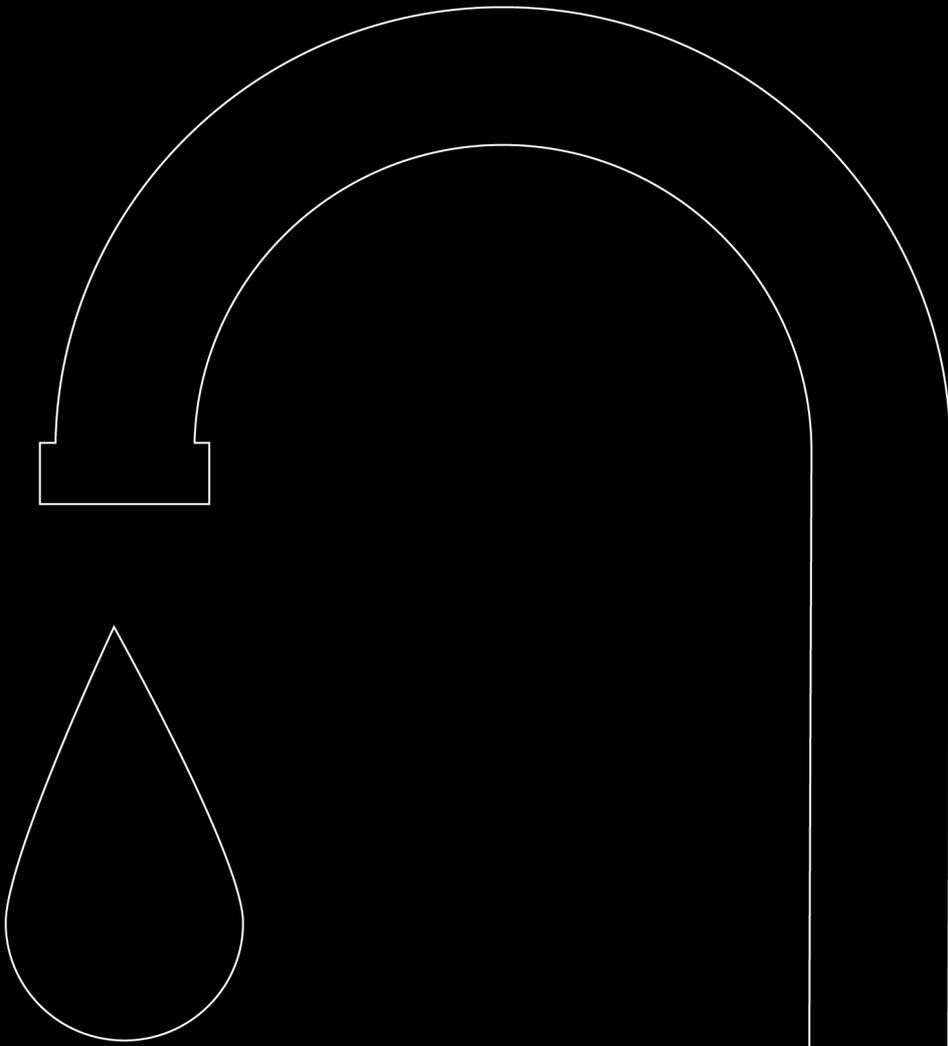




IMPULS



drink water
with pleasure ■

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IMPULS HOME

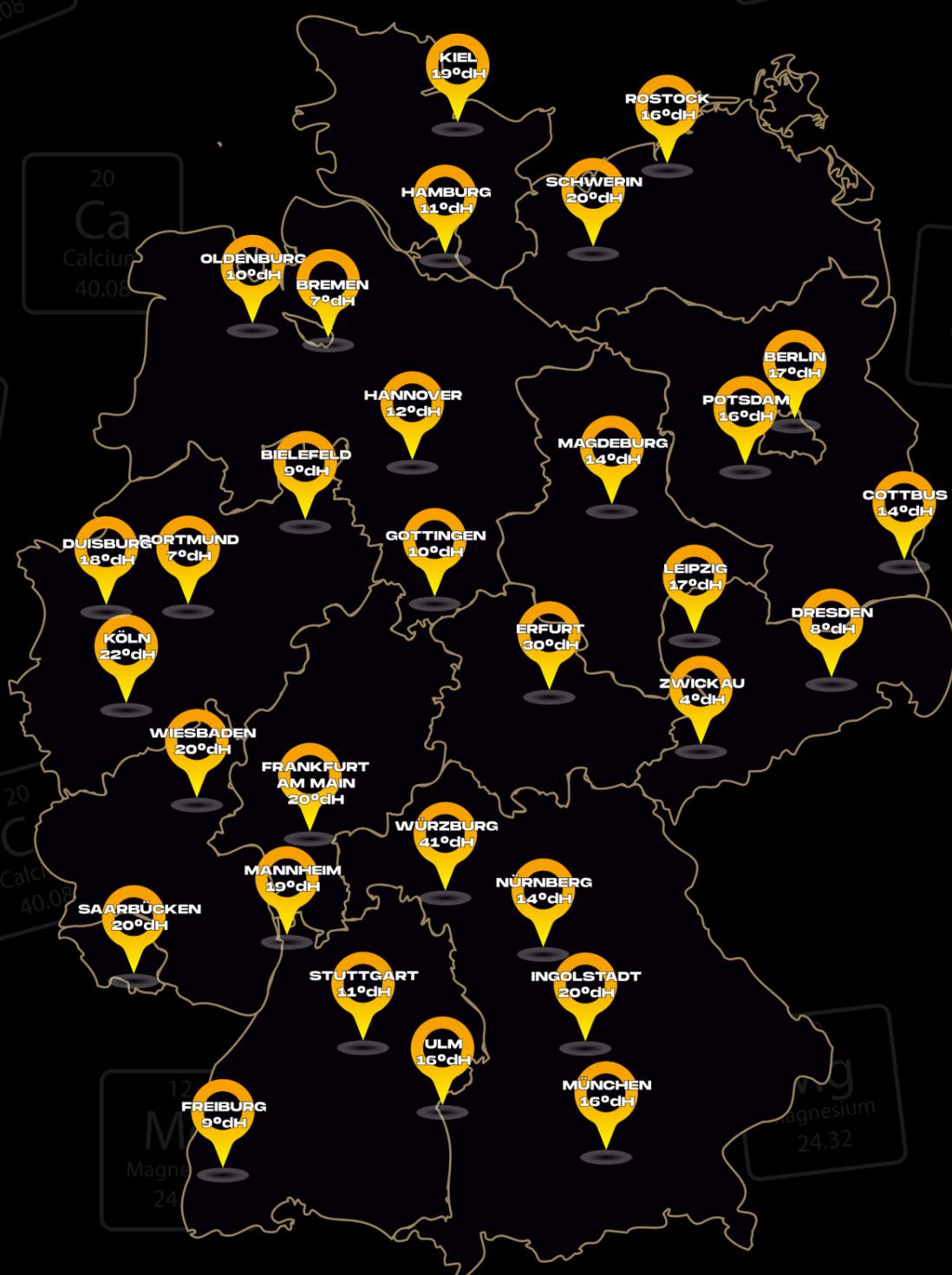
DreamFilters® DESCALING SYSTEMS

FOR A CLEAN & HEALTHY HOME

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WATER HARDNESS IN GERMANY



HARD WATER = LIME SCALE

Water is one of the most closely monitored natural resources. The problem: since it is not considered a health risk, quality standards for treated water allow for a high level of hardness. However, this puts water systems and appliances at risk, as they can be damaged by limescale deposits.

Water hardness, more precisely limescale, which consists of calcium (CaCO_3) and magnesium carbonates (MgCO_3), is a significant cost factor in our households.

Limescale builds up on the inner walls of boilers, kettles, pots, water heaters, on radiators (e.g., on the surfaces of electric heaters), and in systems where hot steam is present.

Limescale deposits in appliances, in turn, lead to costly repairs, premature wear of household devices, and increased use of cleaning agents. They also make the use of aggressive chemicals necessary.

Did you know that limescale is an excellent "insulator"? In plain terms: when it accumulates in a heating system or boiler, energy consumption increases. More energy is therefore needed to heat water or to warm the home.

- **Attention:** every **1-millimeter-thick layer** of limescale that forms on a radiator or the inner wall of a boiler results in approximately **15%** additional heat loss!

HARDNESS LEVELS FOR DRINKING WATER:

<8°dH SOFT WATER

<14°dH MODERATELY HARD WATER

<22°dH HARD WATER

>22°dH VERY HARD WATER

*Information on water hardness in individual cities is based on average values from local testing stations, municipal data, or water utilities. However, it does not replace checking the water hardness at the specific point of use in your home.



IS A WATER SOFTENER AN EXPENSIVE INVESTMENT?

The classic solution for combating limescale deposits is chemical removal using a water softening system. This makes it possible to precipitate limescale from the water, but it comes with high purchase and operating costs as well as annual maintenance. In addition, the frequent refilling of regeneration salt becomes annoying over time – and also harms the environment!

HOW MUCH SALT DOES SUCH A WATER SOFTENING SYSTEM NEED, AND WHAT COSTS DOES IT INCUR?

The costs of using a water softening system are very individual for each user. They depend on several factors: the hardness level of the water, the amount of water used, and the manufacturer of the respective device.

HERE'S AN EXAMPLE:

For a family of four whose water softener contains 20 litres of ion-exchange resin and whose water hardness is just 321 mg CaCO₃/L (about 18 °dH), certain calculations can be performed.

Based on the data on water hardness and the resin capacity, we can calculate that the resin regeneration takes place after filtering 3–4 cubic meters of water. Assuming that each household member uses around 3 cubic meters of water per month, we know that the water softener regenerates the resin about three times a month.

For regeneration, a water softener of this size requires approximately 120–170 liters of water. Typically, the device uses around 130 liters of water and 2.9 kilograms of salt, although in some models the salt consumption can reach up to 4 kilograms.

OPERATING COSTS PER MONTH:

Per month, the water softener consumes between 360 and 510 liters of water as well as 7 to 12 kilograms of salt, which amounts to around 150 kilograms per year. It is recommended to use high-quality salt in tablet form to prevent clumping and to avoid clogging of the pipes and the device. The amount of the water bill varies depending on the region and the type of wastewater disposal, and in some cases, this may result in higher costs. Electricity costs are also added, although these should not have any significant impact on the total operating costs.

ADDITIONAL OPERATING COSTS OF THE WATER SOFTENER:

The ongoing costs of a water softener also include the annual or biennial maintenance service. The cost of this service, including travel and materials, is approximately 250 to 300 euros. The ion-exchange resin is usually replaced every 7 to 10 years, which represents an additional, though infrequent, expense.

FOR THE SAKE OF THE ENVIRONMENT – OR NOT?

Probably you have heard about the disaster in 2022 on the Oder River. This prompted the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) in Berlin to launch its own investigation.

Scientists are tracking a potent toxin that may be produced by a certain species of algae. This algae normally only occurs in brackish water and requires a salt content that does not naturally exist in the endangered section of the Oder!

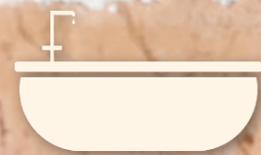
However, in Frankfurt an der Oder, a significantly elevated, unnatural salt concentration has been measured for weeks, which has contributed to the growth of the toxic algae *Prymnesium parvum*. These algae are particularly dangerous for animals that breathe through their gills, such as fish, mussels, and amphibians. The toxins attack mucous membranes and small blood vessels, causing damage.

The entire situation demonstrates how destructive massive, highly saline industrial discharges can be to the environment, especially when water levels are low, oxygen content is reduced, and water temperatures are too high.

***Warning:** The water softening system causes more sodium ions to enter the drinking and wastewater. This can have serious consequences: the sodium-saturated water produced during regeneration cannot be treated. If it penetrates the groundwater, it renders it unusable for further use as drinking water!

***Conclusion:** If the wastewater from the water softening system were discharged directly into a small sewage treatment plant, it would destroy the natural biological processes there. Sooner or later, the small treatment plant would completely fail. Therefore, the wastewater from the water softener must be disposed of separately to avoid disrupting the treatment plant.

According to still unofficial sources, the use of water softeners could be completely banned in the future!



Shiny faucets and ceramic tiles



Important minerals remain in the water



Powerful water jet and effortless cleaning of the cabin



Shiny, spot-free dishes



Protection and efficiency enhancement of the heating system



Protection of pool equipment and clear water



Reduction of cleaning agent usage



Extension of the lifespan of household appliances

IMPULS GENERATOR INSTEAD OF WATER SOFTENING SYSTEMS?



UNIQUE IMPULSE TECHNOLOGY WITHOUT SALT!

THE PERFECT SOLUTION FOR THE ENTIRE HOUSE, BUSINESS, AND INDUSTRY

Wouldn't it be nice if you no longer had to constantly replace broken appliances due to limescale deposits?

Wouldn't it be a dream if the dishes in your dishwasher came out without dried-on spots?

Wouldn't it be an incredible relief if you no longer had to constantly clean limescale-covered faucets – a battle you can never truly win?

Discover the innovative system for physical water treatment that is based solely on the interaction of electromagnetic fields. The IMPULS HOME descaling system offers the perfect solution in the fight against limescale and corrosion. With high efficiency, low acquisition costs, and an entirely environmentally friendly operation, it has already proven itself in numerous private households, apartments, multi-family houses, and even in industry.

Learn more about our wide range of options! We offer devices for pipes with very small diameters of 1/4" up to industrial sizes of 120", which corresponds to a pipe diameter of 3 meters.

We warmly invite you to discover our world without limescale. Let this reading inspire you and get to know the secrets of our innovative technology. Learn how you can win the battle against limescale once and for all and gain a new perspective on clean water!

GET RID OF THE LIMESCALE PROBLEM ONCE AND FOR ALL!



HOW DO IMPULSE GENERATORS WORK?

The IMPULS system acts inductively on hydrated ions by generating an alternating electromagnetic field produced by a system of two coils mounted on a water pipe. The system is powered by an electric generator designed for the optimal pipe size, pulse frequency, and device power or water consumption. This breaks the chemical bonds between the ions (similar to heating water), which can be summarized by the following formula:



Since we do not heat the entire water, but only move the ions, the energy consumption of the IMPULS system is minimal.

The key differences between the effect of IMPULS devices and heating water are:

1. Carbon dioxide (CO_2) does not escape (it is not thermally degassed as with heating). The pH of the water remains unchanged.
2. Part of the CO_2 is converted into aggressive $\text{CO}_{2\text{aggr}}$, which helps dissolve deposited limescale (calcium).
3. The released carbonate ion (CO_3^{2-}) combines with Ca^{2+} under the influence of the magnetic field to form electrically neutral calcium carbonate (CaCO_3) molecules.
4. Crystal nuclei are formed due to temperature or pressure changes in the water. Smaller limescale crystals form on these nuclei, which can be flushed out of the water system.
5. The ionic strength of the water is reduced after treatment with IMPULS from:

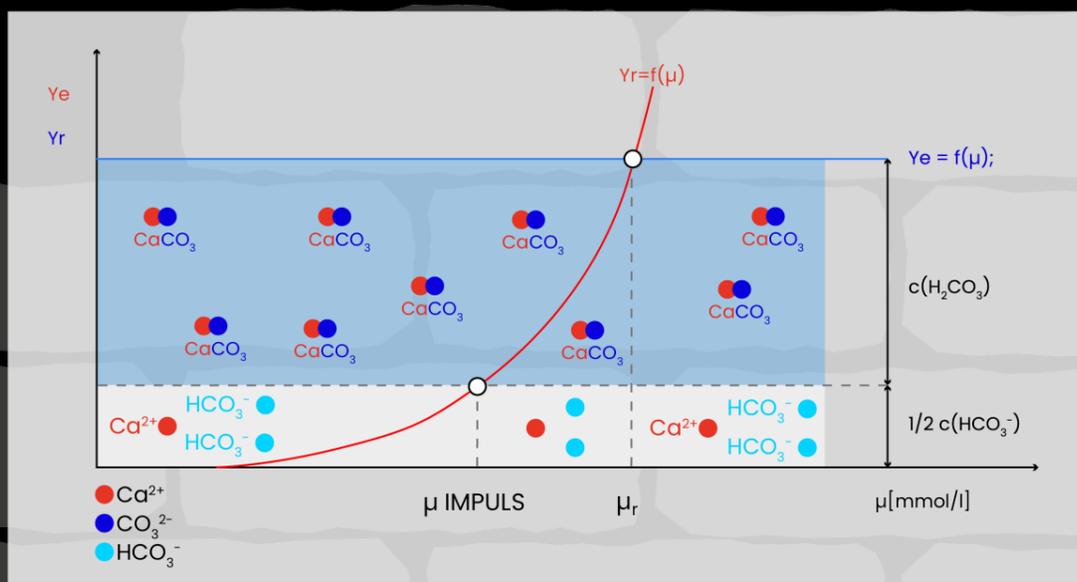
$$\mu_r = \frac{1}{2} \sum c \{ \text{Ca}^{2+} + (\text{HCO}_3^-)_2 \} = \frac{1}{2} c \{ 1 \cdot 2^2 + 2 \cdot (-1)^2 \} = 3$$

to a new value:

$$\mu_{\text{IMPULS}} = \frac{1}{2} \sum c \{ \text{CaCO}_3 + \text{OH}^- + \text{CO}_2 + \text{H}_3\text{O}^+ \} = \frac{1}{2} c \{ 1 \cdot (-1)^2 + 1 \cdot 1^2 \} = 1$$

6. The reduction in ionic strength lasts for a certain period and depends on the chemical composition of the water as well as the level of purification (efficiency of the magnetic impulse field). If no thermodynamic changes are induced by external factors (e.g., heating of the water) during this period, the ionic strength returns to its previous value, and the achieved positive effect is lost.

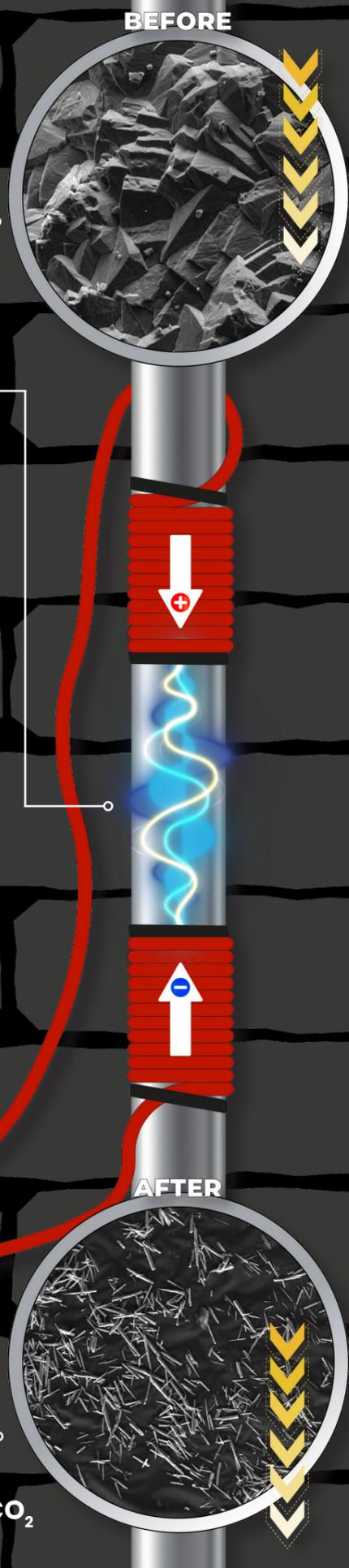
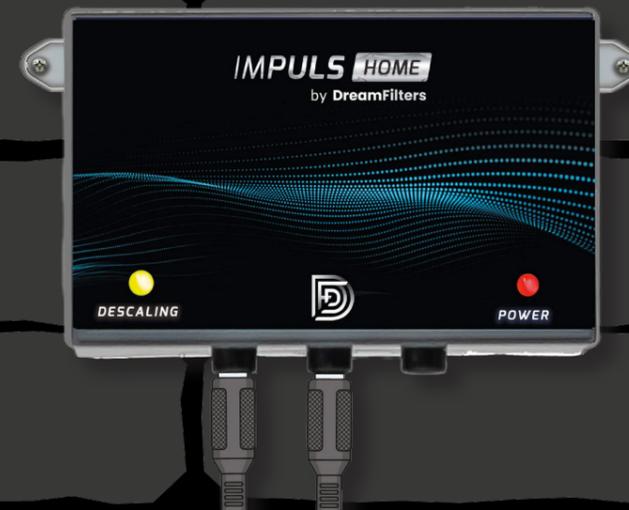
DIAGRAM OF WATER TREATMENT WITH IMPULS DEVICES



See the compact structure of limescale before treatment, which accumulates on the walls of household appliances and deposits in the pipes of water and heating installations. This systematically leads to a reduction in the permeability of the pipes and a drastic shortening of their lifespan. Hard water negatively affects the quality of life for everyone.

A strong electromagnetic field is generated between the coils, which effectively acts on limescale and alters its structure. The impulse technology also produces CO and induces the electrophoresis phenomenon to form a protective layer that shields the pipes from corrosion.

IMPULSGENERATOR



The chemical compound calcium hydrogen carbonate, commonly known as limescale, is broken down into monocrystals by the induction of high-frequency alternating current. This means that the limescale no longer has the ability to form solid structures, losing its capacity to deposit. Limescale in this form is flushed out of the installation.



RESULT WITH DREAMFILTERS IMPULS HOME

You are probably wondering what effects you can expect from using the IMPULS HOME devices. As already explained, the IMPULS devices do not remove limescale and do not change the water hardness. Instead, they break down the structure of magnesium and calcium into fine monocystals. This eliminates the harmful effects of limescale. These crystals remain in suspension and can no longer form solid limescale layers, reliably preventing new deposits.

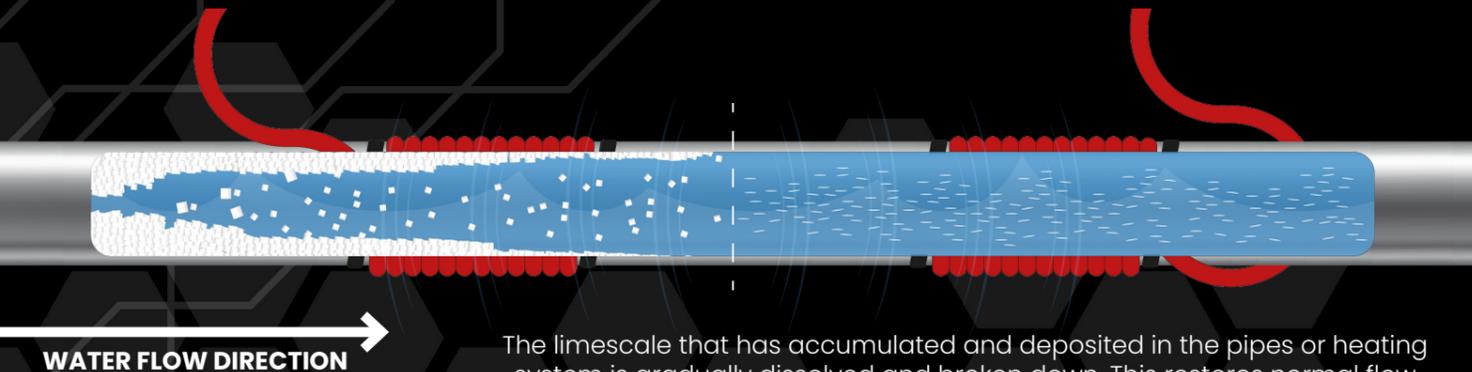
Depending on where or with which devices we are dealing, the descaling effect can be twofold. This can be illustrated using the example of a device with a drainage system, such as a washing machine, and a device without a drain, such as a kettle.

In the washing machine mentioned above, the altered, broken-down limescale particles are discharged along with the wastewater at the end of the washing cycle. This prevents the limescale from remaining in the washing machine, protecting it from scaling.



In devices without a drain, such as a kettle, a white residue accumulates on the inner walls. This residue has a texture similar to damp flour and can be easily wiped away with a cloth—without using aggressive cleaning agents like vinegar or citric acid and without laborious scrubbing of the surfaces.

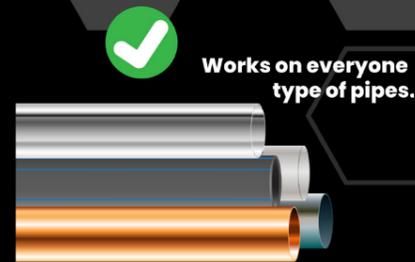
WATER PIPES AND HEATING ELEMENTS



The limescale that has accumulated and deposited in the pipes or heating system is gradually dissolved and broken down. This restores normal flow in the pipes. Water heating becomes more efficient, as the heating time is significantly reduced.

Scaling in the boiler is also stopped, and existing limescale deposits are broken down and flushed out with the flowing water.

ADVANTAGES OF IMPULS GENERATORS:



No matter what type of pipe is installed in your home—whether brass, steel, plastic, or stainless steel—IMPULS HOME can be easily installed in your house, apartment, office, garage, or any other location where it is needed.



You don't need a professional, because the descaling system can be easily installed by yourself—without having to dismantle or modify your existing installation!



Regardless of the diameter of your pipes—we have generators for every pipe size, from 1/4 inch up to an impressive 120 inches!

For the installation of the IMPULS HOME device, you only need 40 centimeters of free space on the pipe.

The generator can be mounted either on the wall or directly on the pipe itself, depending on the circumstances.

Keep in mind that the coils can be installed both horizontally and vertically without affecting effectiveness.

It is important to install the device behind the water meter and ideally behind the backwash filter, which is usually located at the beginning of the installation.



Effective protection of household appliances and heating systems against limescale deposits and corrosion. Increases the efficiency of heating systems and extends the lifespan of appliances by preventing deposits and reducing maintenance costs.

SENSE OF COMFORT



With IMPULS systems, you are fully taken care of: they operate reliably 24/7 without requiring you to monitor the processes. Enjoy better water hygiene, softer skin, fuller and shinier hair, and noticeable time savings thanks to reduced cleaning effort.



The IMPULS HOME system offers a particularly economical solution, as it has low acquisition costs, minimal electricity consumption, and requires no additional expenses for salt or chemicals. Furthermore, annual maintenance is not necessary, as the system is completely maintenance-free.

BY WHOM AND WHERE CAN IMPULS SYSTEMS BE USED?

• IN HOUSES OR APARTMENTS •

Don't worry anymore about annoying limescale deposits in your home. Use the IMPULS generator, which can be easily installed on various pipes. Simply connect it to the power supply and voilà—your pipes, heating system, and household appliances are now protected. No more concerns about limescale formation and corrosion issues.



• IN AGRICULTURE •

The system is valued by farmers, especially those using drip irrigation systems for their crops. Our devices protect against damage and failures in plant irrigation.



• FOR COMPANIES OF ALL INDUSTRIES •

It is impossible to list all the different applications for IMPULS descaling devices. Owners of restaurants, hotels, bars, laundries, beauty salons, dentists, etc., save significant costs by avoiding the purchase of salt and chemicals and by protecting their equipment from damage caused by hard water.



• IN INDUSTRY •

Water installation systems consist of various materials and components such as feed pumps, valves, flow sensors, and pressure gauges. We have the most powerful generators in Europe to protect installations and expensive interiors from limescale caused by hard water. In many cases, this can be combined with water treatment technology to create technologically optimal solutions.



FAQ

1. What happens to the limescale in the water after it has been treated by the IMPULS HOME generator?

The IMPULS HOME descaling system does not remove limescale but changes its structure. The IMPULS HOME generators treat the water so that the contained limescale precipitates as powdery aragonite rather than hard calcite. As a result, the limescale remains in the water, but no chemicals or laborious scrubbing are required. Ultimately, the limescale is either carried away into the sewage system or can be easily removed with a clean microfiber cloth or even a finger.

2. Where is the optimal location to install the IMPULS HOME device?

The IMPULS HOME device should be installed on the cold water pipe in the house, ideally near the water meter, behind a backwash filter, to effectively cover the entire house.

3. How many IMPULS HOME generators are needed per household?

Basically, only one IMPULS HOME generator is needed for a single house, but there are exceptions. For example, if there is a circulation pump in the heating system, an additional IMPULS device is installed behind the pump, as each pump in the system can affect the performance of the generator.

4. How can the effect of IMPULS HOME be demonstrated?

The IMPULS HOME signal has such low power that it can be measured with sensitive instruments (e.g., an oscilloscope). The signal is designed to achieve maximum effects with minimal power consumption. Based on the signal parameters, irregularities in the device's operation as well as potential damage from external influences can be assessed.

5. At what frequency does the IMPULS device operate, and how far is the signal transmitted?

Die Impuls Home-Generatoren arbeiten je nach Gerät mit einer Frequenz von 100–160 kHz. Das Signal wird durch das Wasser, das als Leitmedium dient, vom Installationspunkt aus über eine Entfernung von mehreren Hundert Metern übertragen.

6. When does the effect of the IMPULS generator begin?

The effect of the IMPULS HOME device begins as soon as it is powered on. Therefore, it is recommended to carry out prior cleaning measures, such as cleaning the strainer in the kitchen faucet and the kettle. This way, you can immediately notice that the faucet strainer does not become clogged with limescale, and the white deposits collected in the kettle can be easily wiped away with a damp cloth, without scrubbing or using vinegar or chemicals.

7. Is the IMPULS HOME device safe to use, and what is its power consumption?

Each IMPULS HOME device is safe to use, as it can be installed in damp rooms thanks to its IP54 protection rating. A low-voltage current flows through the wires wrapped around the pipes, posing no risk to the user's life or health. The power consumption varies depending on the device's capacity and ranges between 1 and 4 watts.

IMPULS HOME **VS** WATER SOFTENER

	IMPULS	WATER SOFTENER
PURCHASE COSTS	Relatively low	Significantly higher
INSTALLATION	Self-installation	With the help of a professional, modification of the water installation
OPERATING COSTS	Electricity costs only	Electricity costs, refilling of regeneration salt, water costs for rinsing, replacement of resin
MAINTENANCE-FREE	Yes	No
EFFECTIVENESS	Yes, with correct installation and when connected to the power supply.	Yes, if the regeneration salt is always refilled, it is connected to the power supply, and there is no water shortage.
LIMESCALE INFLUENCE	Change of limescale structure into a non-aggressive form through high-frequency voltage.	Limescale removal through ion exchange of calcium and magnesium ions for sodium ions.
WATER TREATMENT / POTABILITY	Minerals remain in the water	Removes minerals and can cause increased sodium concentration (unhealthy for health) in the water.
SOFT WATER	Effect of soft water	Soft water
ENVIRONMENTALLY FRIENDLY	Yes	No

DESCALING SYSTEMS FOR HOME

Below, we present the IMPULS HOME descaling systems, which are ideal for use in single-family homes, apartments, multi-family houses, and other residential buildings, and effectively combat limescale deposits. Please check which model is suitable for the pipe diameter in your building. Using the notes at the top of the catalog, you can easily determine whether a single device is sufficient or if an additional device is required to optimally protect your water installation.

DESCALING SYSTEM IMPULS HOME – 20

Up to ¾" or 20 mm pipe diameter and a maximum flow rate of 0.9 m³/h



DESCALING SYSTEM IMPULS HOME – 25

Up to 1" or 25 mm pipe diameter and a maximum flow rate of 1.2 m³/h



DESCALING SYSTEM IMPULS HOME – 32

Up to 1¼" or 32 mm pipe diameter and a maximum flow rate of 1.8 m³/h



DESCALING SYSTEM IMPULS HOME – 40

Up to 1½" or 40 mm pipe diameter and a maximum flow rate of 2.8 m³/h



For larger pipe diameters from 50 mm, the IMPULS PRO series is designed, which is used in large buildings, agriculture, or industry. We offer devices for every pipe diameter without limitations – just send us your inquiry!

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