



Against scale and rust



Made in Germany

Physical water treatment has for many years successfully demonstrated to be an efficient method to improve the quality of our water without adding chemicals or salt. Nowadays, it has become even more important to capitalize on technologies which do not harm our environment but rather try to create an optimal balance between mankind and nature.

Vulcan is based on such a technology and the result of twenty-five years of constant research and improvements in the field of physical water treatment by Christiani Wassertechnik GmbH (CWT). Our latest product generation continues to provide you with reliable German quality combined with an extensive warranty.

I would like to thank you for your trust in this technology and our expertise in the field of physical water treatment. Many satisfied customers worldwide account for the success of Vulcan which will also become visible to you.

Rolf Christiani

Graduate Business Engineer
Managing Director CWT



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The scale problem

The water we use at our private homes as well as at commercial and industrial facilities contains dissolved scale consisting of calcium and magnesium. When exposed to temperature increase or decrease of pressure the liquid scale crystallizes on surfaces producing calcifications. These crusty scale deposits appear in places where water is heated, swirls around or leaves the pipes.

Scale deposits on the inside of pipes, on heating elements or on expensive machinery create many problems, the most common of which are:

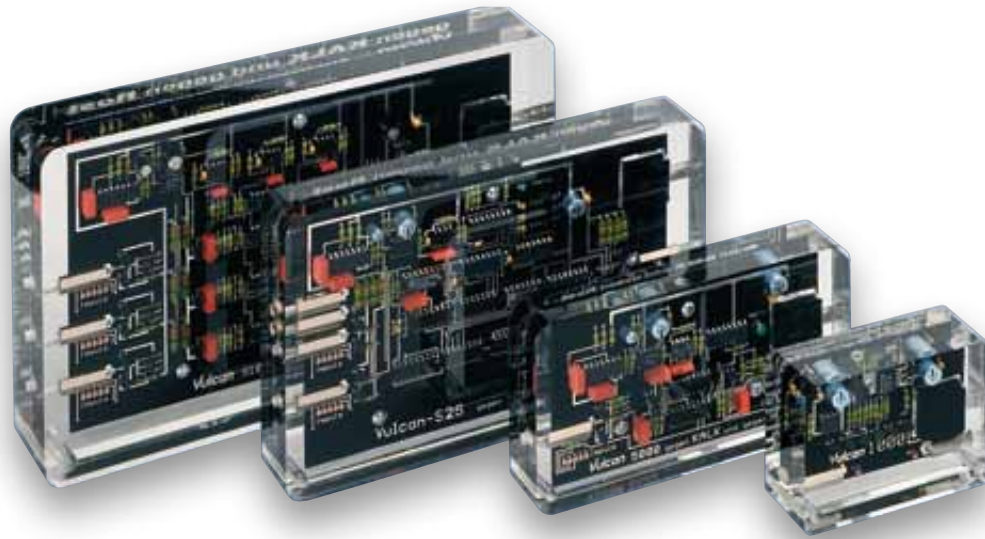
- **Loss of energy due to longer heating times**
- **High costs of repairs and maintenance of machines and equipment**
- **Loss of water pressure due to reduced pipe diameters**
- **High cleaning costs and the need of aggressive cleaning agents**
- **Decrease in overall industrial productivity**

The longer you wait to take action against these problems the more damages and costly repairs will arise. Soon you will have to replace the whole piping system and buy new equipment.



Vulcan – Against scale and rust

Vulcan provides you with an eco-friendly water treatment system which protects your water pipes and equipment against scale and rust. The method is based on the patented Vulcan-Impulse-Technology and treats your water without applying any chemicals or salt. Vulcan offers you individual solutions customized to your needs. It is applicable for private, commercial and industrial use.



The characteristics of Vulcan

- Works on every pipe material – iron, copper, plastic, stainless steel
- Long-life fully cast in acrylic
- Easy installation without cutting the pipes
- Applicable on pipe diameters of 10 mm to 500 mm (1/2" to 20")

Vulcan – Quality Made in Germany

- 25 years of experience in the field of water treatment
- International 10-year warranty
- More than 50.000 satisfied customers world-wide



**10 Years
Warranty**

**Made in
Germany**



The 3 Vulcan effects

- ✓ **Vulcan stops scaling on surfaces**
- ✓ **Vulcan sanitizes the piping system**
- ✓ **Vulcan protects against rust and corrosion**

1. Vulcan stops scaling on surfaces

Vulcan-based water treatment does not change the original water quality but modifies the crystallization of the scale. When exposed to temperature increase or decrease of pressure, liquid lime as contained in hard and untreated water crystallizes forming a bur-like structure (pic.1). These structures stick to each other, adhere to surfaces and thus produce solid scale deposits within a short period of time.

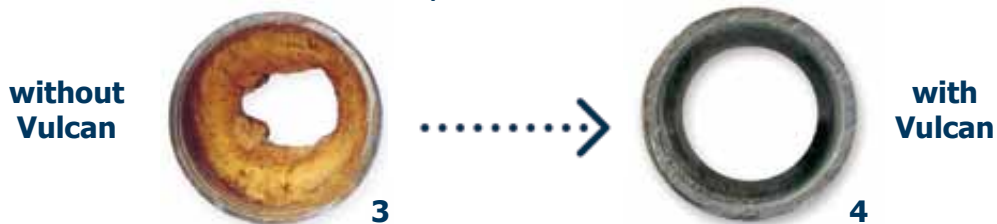


Making use of the natural process of electrophoresis the patented Vulcan-Impulse-Technology modifies the crystallization of calcium and magnesium. Now, the liquid lime in Vulcan-treated water crystallizes forming "inoffensive" mono-crystal rods (pic.2). These crystal rods cannot connect to each other and get washed away with the water in the form of fine-grained powder.



2. Vulcan sanitizes the piping system

Two simultaneous processes take place in untreated, hard water. In the first process scale deposits build up when scale crystals connect to each other. This first process produces carbonic acid, which simultaneously resolves existing scale deposits within a second process. This phenomenon is called the "natural resolving process". As the incrustation process is much faster than the natural resolving process the pipes' diameter constantly decreases (pic.3).



Vulcan protects the pipes against new incrustations: With Vulcan the natural scale resolving process only has to deal with the already existing calcifications. New incrustations do not disturb the process of scale removal anymore and the pipe gets gradually cleaned (pic.4). As carbonic acid can only dissolve scale from scale but not scale from the pipe a thin protective layer always remains on the inside of the pipe.

3. Vulcan protects against rust and corrosion

When the pipe gets into contact with aggressive, hard water an oxidation process takes place. This happens especially to pipes made of copper, iron or galvanized iron (pic.5). This damage by rust and oxidation seriously affects the pipe surface and produces pitting corrosions.



The Vulcan-Impulse-Technology generates a controlled electrophoresis which produces a protective metal-carbonate layer. According to the pipe material, this layer consists of copper-carbonate, iron-carbonate or zinc-carbonate and settles on all blank surfaces.

Private Line – Vulcan 1000 and Vulcan 5000

The Vulcan Private Line devices have been designed to protect the piping system in private houses and small commercial equipment, such as coffee machines and dish washers. These units can easily be installed within a few minutes.



Application areas

- Houses
- Flats
- Swimming pools
- Machinery
- ...

Vulcan 1000



Capacity	1000 l/h (~265 gal/h)
Maximum pipe diameter	25 mm (1")
Wattage	1.25 Watt
Impulse cable	2 x 0,5 m (flat)
Required space	200 mm

Vulcan 5000



Capacity	5000 l/h (~1325 gal/h)
Maximum pipe diameter	50 mm (2")
Wattage	2.0 Watt
Impulse cable	2 x 1 m (flat)
Required space	350 mm

Benefits of the Private Line

Secure reduction of scale deposits in the whole piping system



Faster cleaning of your kitchen and bathroom



Considerable savings in washing and cleaning agents



Eco-friendly method without chemicals or salt



Important minerals remain in the water



Less time and effort spent on repairs and maintenance at your home, e.g. boiler, washing machine etc.



Commercial Line – Vulcan S 25 and Vulcan S 100



The Commercial Line devices operate at a capacity of up to 100 m³/h (110 tons/h) and have been designed to perfectly meet the requirements of small and large commercial facilities. These programmable units allow for an individual adjustment according to the materials and diameters of the pipes.



Application areas

- Hotels
- Apartment houses
- Agriculture
- Golf courses
- Fitness Clubs
- ...

Vulcan S 25



Capacity	25 m ³ /h (28 tons/h)
Maximum pipe diameter	100 mm (4")
Wattage	2,25 Watt
Impulse cable	4 x 2 m (flat)
Required space	600 mm
Programs	5

Vulcan S 100



Capacity	100 m ³ /h (110 tons/h)
Maximum pipe diameter	150 mm (6")
Wattage	2,5 Watt
Impulse cable	6 x 4 m (flat)
Required space	1200 mm
Programs	10

Benefits of the Commercial Line

Savings due to more efficient use of energy spent on heating water



Maximum working life of commercial machinery and equipment



Less time and effort spent on cleaning



Reduced maintenance work on irrigation plants and water tapping



Food and beverages keep their natural taste



More reliable water supply within sanitary facilities



Industrial Line – Vulcan S 250 and Vulcan S 500



The large Vulcan devices operate at a capacity of up to 500 m³/h (550 tons/h) and have been designed to provide solutions for nearly all kind of applications in light and heavy industries. The individual adjustment to pipe diameters and pipe materials is based on 10 different system-integrated programs.



Application areas

- Cooling towers
- Heat exchangers
- Food industry
- Hospitals
- Refineries
- ...



Vulcan S 250



Capacity	250 m ³ /h (280 tons/h)
Maximum pipe diameter	250 mm (10")
Wattage	2,75 Watt
Impulse cable	8 x 10 m (flat)
Required space	2500 mm
Programs	10

Vulcan S 500



Capacity	500 m ³ /h (550 tons/h)
Maximum pipe diameter	500 mm (20")
Wattage	3,25 Watt
Impulse cable	10 x 30 m (flat)
Required space	5000 mm
Programs	10

Benefits of the Industrial Line

Easy cleaning and no need to apply acids in cooling towers



Inexpensive installation without interruption of the production process



Productivity increase due to the reduction of lime incrustations



Maximum working life of expensive production facilities



Inexpensive solution without application of chemicals and salt



Fast amortization of acquisition costs



Frequently Asked Questions

Which pipe materials are the devices suitable for?

The devices are suitable for all pipe materials: copper, iron, stainless steel, plastic and compound pipes.

Do copper or synthetic pipes need a scale protection device at all?

Yes. Copper and plastic pipes are prone to calcifications, too. The smoother a surface is the longer it can resist the process of calcification. Once a first layer of scale has built up, however, the incrustation process proceeds just as fast as on any other surface.

Does the Vulcan treatment have a softening effect on the water?

As the water treated by Vulcan does not lose any essential minerals, such as calcium and magnesium, the composition of the water remains unaltered. It feels noticeably softer, though. You are sure to feel this effect when showering or washing your hair. The treatment does not, however, change the measured water hardness.

How long does it take Vulcan to sanitize the pipes?

Vulcan removes scale and rust slowly and without affecting the pipes. The cleaning process takes about as long as it took the incrustations to develop. A faster removal would inevitably block up the pipes and may even destroy them.

Up to which degree of water hardness can Vulcan be applied?

Vulcan operates within a high performance frequency range. It can thus be successfully applied even on water of a particularly high degree of hardness.

How can I find out if Vulcan operates efficiently?

Red pilot lights at the cable outputs indicate that the impulse generator is operating efficiently. In case these lights are not illuminated, please check the power supply voltage.

Which voltage range is the electronic plug-in power supply unit suitable for?

All Vulcan power supply units are suitable for voltage ranges between 87 Volt – 260 Volt and 50 Hz – 60 Hz.

What are the power costs of Vulcan per year?

Vulcan is completely maintenance-free. The cost of electric energy per year amounts to approximately 2 to 6 Euro (US\$ 3 – US\$ 7).

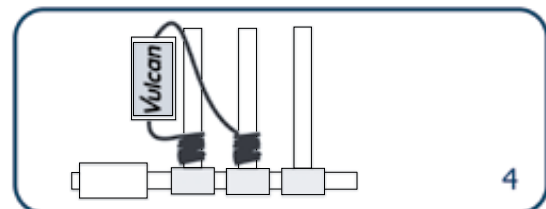
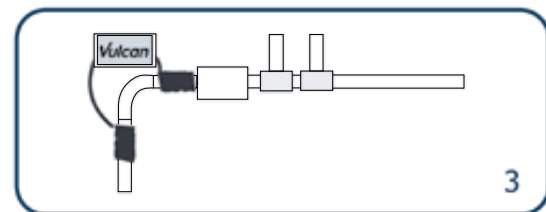
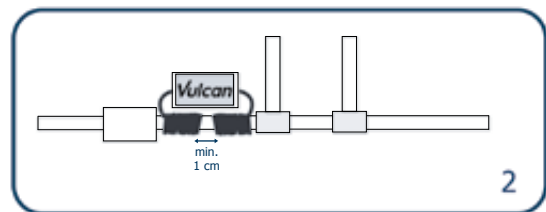
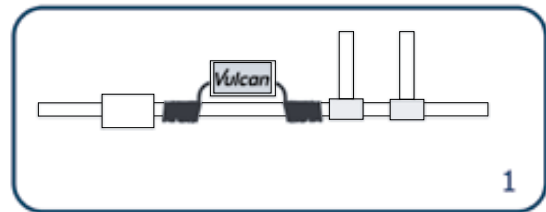
General advice

1. Protect the power supply unit against exposure to direct water.
2. Use the included switching power supply unit only.
3. Do not cut the impulse cable nor the 24 V power cord of the power supply unit.
4. Do not remove the end caps or the impulse cable insulation.
5. The operating temperature of Vulcan ranges from -10°C to $+50^{\circ}\text{C}$ (14°F to 122°F).
6. Clean the device with water only.
7. Temperature peaks on heating surfaces should not exceed 95°C (203°F).

Notes on the installation

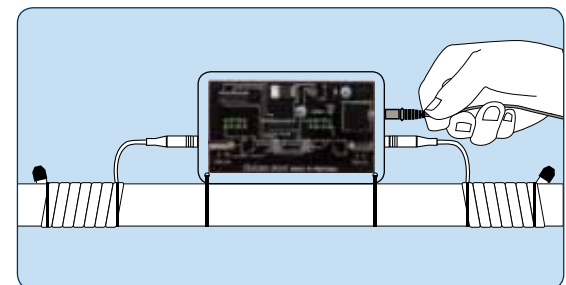
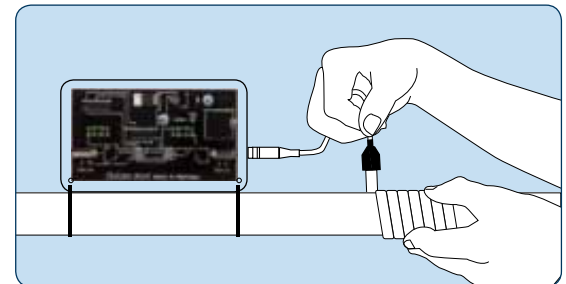
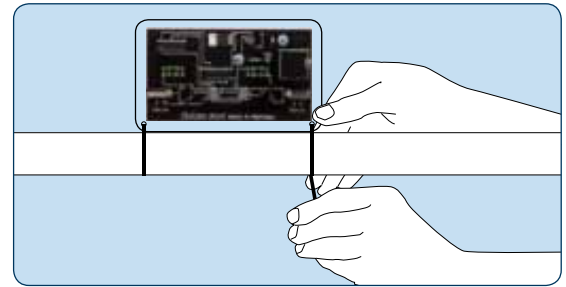
1. For an optimal water treatment Vulcan is best installed near the water meter or at the main water supply (pic.1).
2. The impulse cable windings can be placed on the left side, on the right side or underneath the electronic device. Leave a safe distance of at least 1cm (1/2") from each other (pic.2).
3. Vulcan can be installed vertically, horizontally or at any other angle. If there is no space available on the pipe the block can also be wall-mounted (pic.3).
4. In case of limited space the windings can be placed partly on the main pipe and partly on the distributor pipe (pic.4).

All the installation possibilities are possible because the treatment impulses extend over several meters to either side of the pipes.



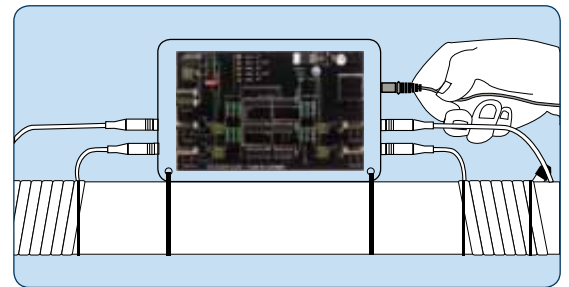
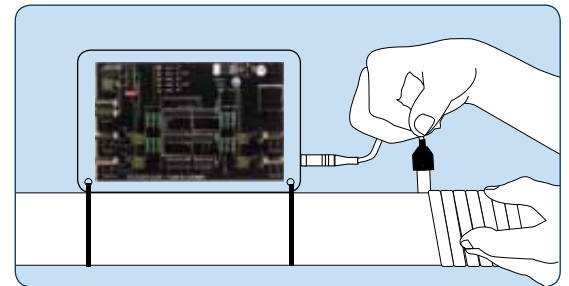
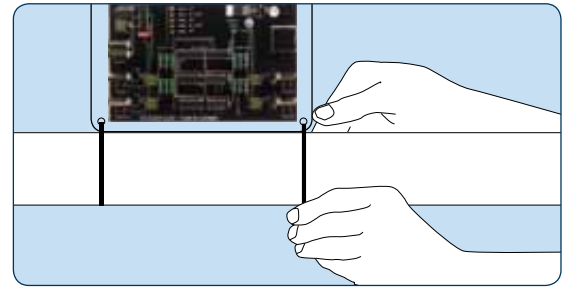
Installation instructions Private Line

1. Put the two cable holders through the fixing holes at the bottom of the electronic device. Now place the device onto the pipe. Use the cable holders to lash the device to the pipe.
2. Connect one of the impulse cables to the device and use another cable holder to lash it to the pipe.
3. Wind the impulse cables around the pipe producing a coil. Make sure you wind the cable tightly to the pipe and place the windings close to each other.
4. Lash the end of the cable to the pipe using another cable holder. Now repeat the procedure with the second impulse cable.
5. Connect the power supply unit with an electrical outlet and plug the connector into the upper right in-jack of the device.
6. The red pilot lights will illuminate as soon as the device starts to operate. Vulcan works from now on maintenance free.



Installation instructions Commercial Line and Industrial Line

1. Put the two cable holders through the fixing holes at the bottom of the electronic device. Now place the device onto the pipe. Use the cable holders to lash the device to the pipe.
2. Plug one of the impulse cables into the bottom impulse cable in-jack and lash it to the pipe using another cable holder.
3. Wind the impulse cables around the pipe producing a coil. Make sure you wind the cable tightly to the pipe and place the windings close to each other.
4. Lash the end of the cable to the pipe using another cable holder. Now plug another impulse cable into the in-jack on the opposite side and repeat the procedure.
5. Plug another impulse cable into the next impulse cable in-jack and, according to the device type, repeat step 2. - 4. until all impulse cables are in use. All impulse cables must be wound tightly around the pipe and fastened with cable holders.
6. Connect the power supply unit with an electrical outlet and plug the connector into the upper right in-jack of the device.
7. Now adjust your Vulcan to optimally treat your water by simultaneously touching the sensors.



Technical data overview

Private Line

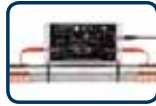
Commercial Line

Industrial Line

Vulcan 1000



Vulcan 5000



Vulcan S25



Vulcan S100



Vulcan S250



Vulcan S500



Capacity	1000 l/h	5000 l/h	25 m ³ /h	100 m ³ /h	250 m ³ /h	500 m ³ /h
Maximum pipe diameter	25 mm (1")	50 mm (2")	100 mm (4")	150 mm (6")	250 mm (10")	500 mm (20")
Voltage	24 volt	24 volt	24 volt	24 volt	24 volt	24 volt
Wattage	1,75 Watt	2,0 Watt	2,25 watt	2,5 Watt	2,75 Watt	3,25 Watt
Impulse cable	2 x 0,5 m flat	2 x 1 m flat	4 x 2 m flat	6 x 4 m flat	8 x 10 m flat	10 x 30 m flat
Measurements mm	60/90/30	85/150/30	125/200/35	160/200/40	205/295/45	225/325/45
Frequency range	3-32 KHz	3-32 KHz	3-32 KHz	3-32 KHz	3-32 KHz	3-32 KHz
Required space	200 mm	350 mm	600 mm	1200 mm	2500 mm	5000 mm
Programs	-	-	5	10	10	10

Electronic Switching power supply unit

In	87-260 Volt 50-60 Hz	87-260 Volt 50-60 Hz	87-260 Volt 50-60 Hz	87-260 Volt 50-60 Hz	87-260 Volt 50-60 Hz	87-260 Volt 50-60 Hz
Out	24 Volt 600 mA	24 Volt 600 mA	24 Volt 600 mA	24 Volt 600 mA	24 Volt 600 mA	24 Volt 600 mA

Excerpt from our client list

Alcatel

Bayer-Leverkusen

BOSCH

DaimlerChrysler

Dynamit Nobel

Hyatt Hotels

Mc Donald's

Mövenpick

SHELL

Siemens

Universität München

Viessmann

Volkswagen



Water as it should be



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