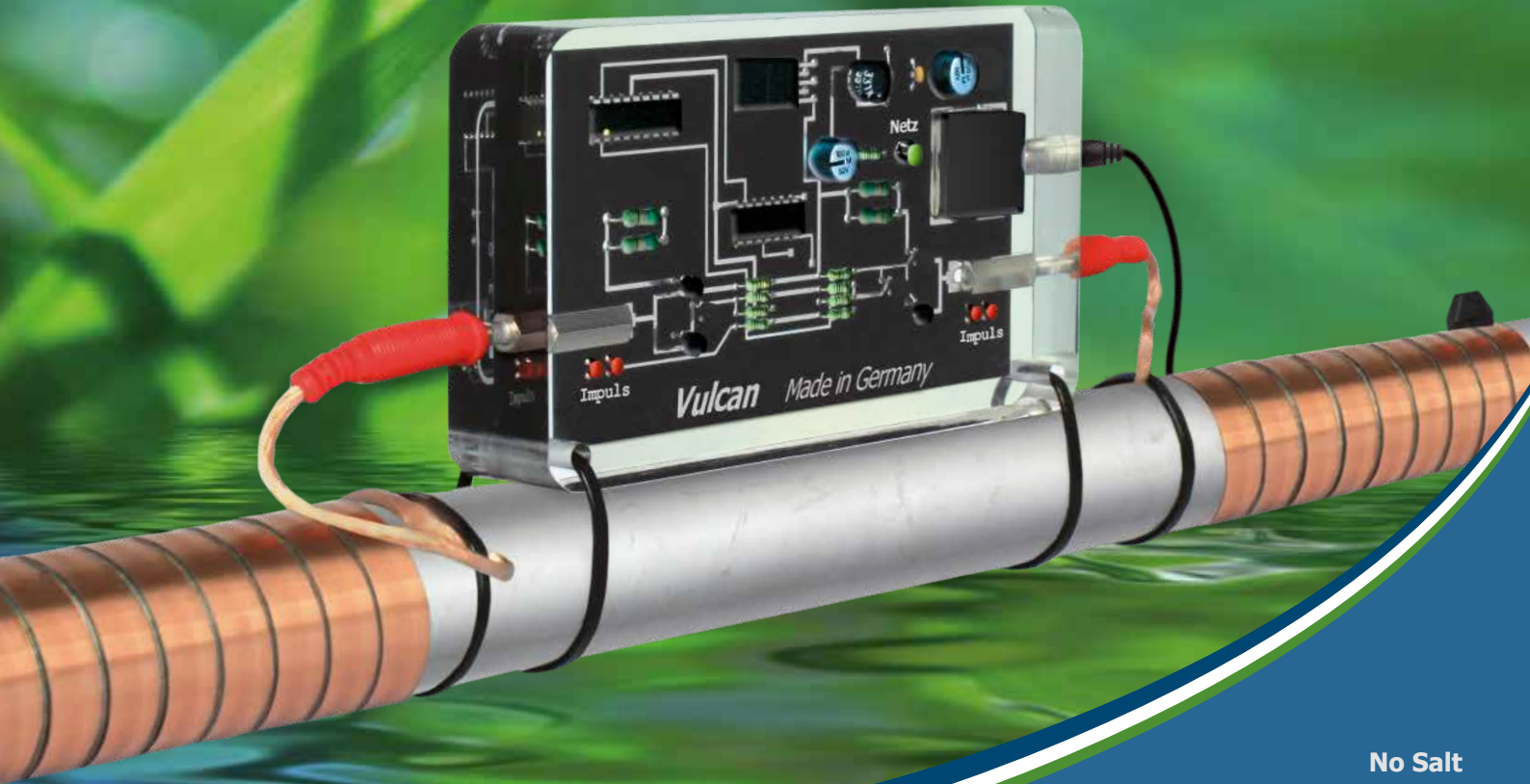




# The electronic anti-scale system

The green alternative to water softeners



No Salt  
No Chemicals  
No Maintenance

German Technology  
Absolutely Magnetism-Free



## Quality - Made in Germany

### Physical water treatment with Christiani Wassertechnik GmbH

Christiani Wassertechnik GmbH - CWT - was established in 1948. Today, it is one of the oldest manufacturers of physical water treatment in the world. The family-run business is headquartered in Berlin, Germany. CWT has more than 30 years of experience in the development and production of anti-scale systems and its products are available in over 70 countries world-wide.

Vulcan offers an eco-friendly technology that comes with an outstanding quality commitment and a ten-year warranty. It solves problems with hard water in residential, commercial and industrial applications.

## Quality - Made in Germany



### Over 30 years of experience in physical water treatment

*Christiani Wassertechnik GmbH  
The managing directors*



*Rolf Christiani*

*Jessica Christiani*

*Cedric Christiani*

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## **Commercial Line**

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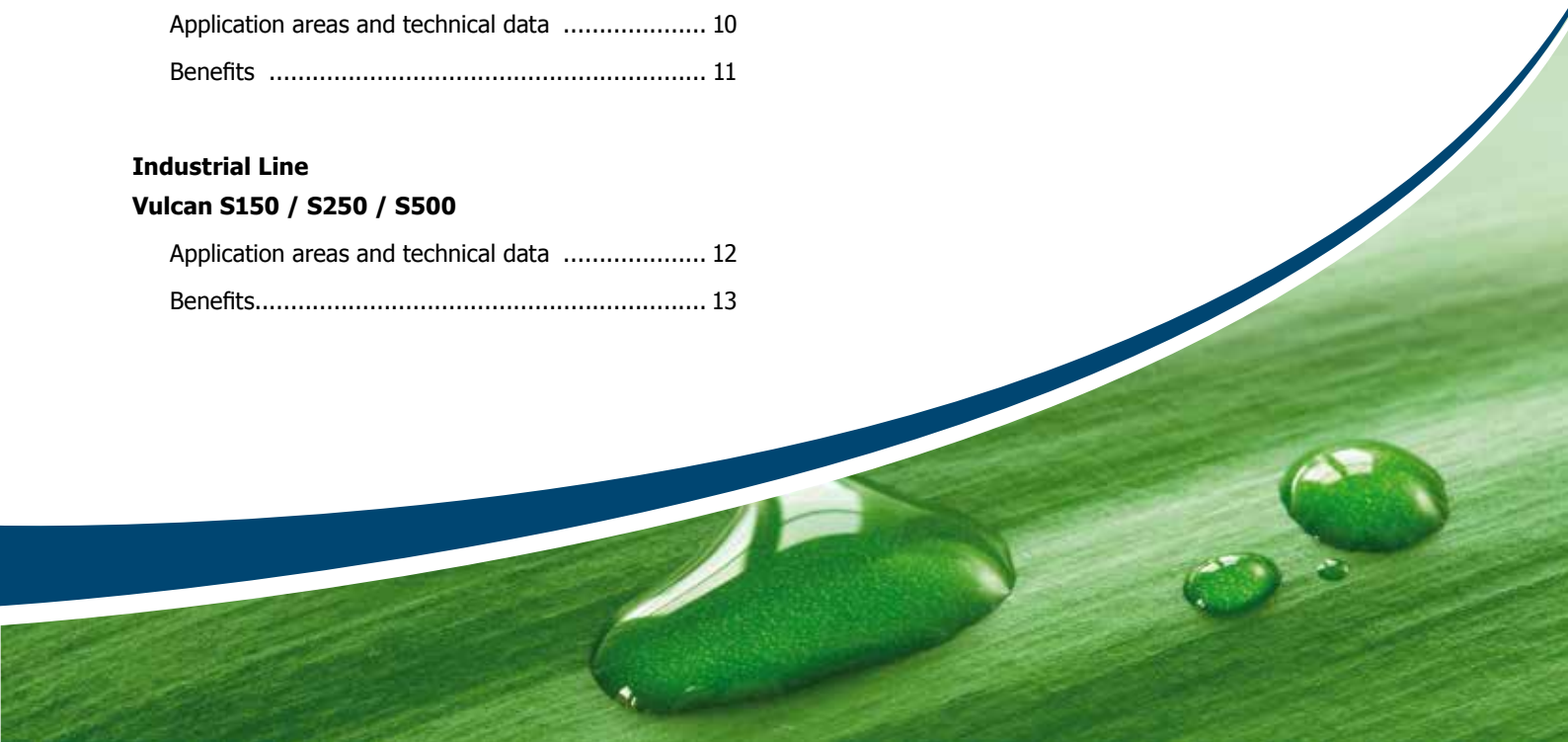
## **Industrial Line**

### **Vulcan S150 / S250 / S500**

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## Vulcan – Prevents scale and rust

### The eco-friendly alternative to water softeners

Vulcan provides an eco-friendly water treatment system which protects your water pipes and equipment prevents scale and rust. The method is based on the Vulcan-Impulse-Technology and treats your water without applying any chemicals or salt.

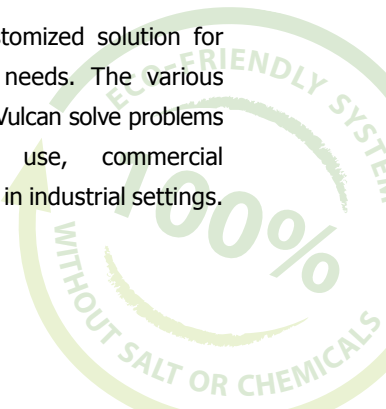
Special electronic impulses change the crystallization process of the calcium in hard water, causing the particles to lose their ability to stick to surfaces.

- ✓ Important minerals remain in the water
- ✓ Maximum working life of machinery and equipment
- ✓ Reduction of scale deposits in the whole piping system
- ✓ **10-year warranty**
- ✓ **Made in Germany**



### Model sizes from ½" up to 20" pipe diameter

Vulcan is a customized solution for your individual needs. The various product lines of Vulcan solve problems in residential use, commercial applications and in industrial settings.



## Benefits

### Vulcan solves scale and rust problems

- Eco-friendly solution against scale problems
- No use of salt or chemicals
- Suitable for pipe diameters from ½" up to 20"
- Fully cast in acrylic for optimal quality endurance
- Maintenance-free
- Do-It-Yourself installation – no need to cut the pipes
- Works on every pipe material – iron, copper, stainless steel, galvanized iron, plastic, PVC, PE-x, compound pipes in any material mixture, etc.

### CWT Quality – Made in Germany

- Manufactured by a 3<sup>rd</sup> generation family business
- Over 30 years of experience in physical water treatment
- International 10-year product warranty
- Available in over 70 countries
- Tested by independent institutes
- cULus, TÜV Nord and CE certified



## The scale and rust problem

The water we use in our private houses as well as in commercial and industrial facilities contains dissolved scale consisting of calcium and magnesium.

When exposed to a temperature increase or change of pressure, the calcium crystallizes and builds incrustations. These hard scale deposits appear often in places where water is heated, swirls around or leaves the pipes.



Pipe with scale deposits



Washing machine heating element

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.

Scale deposits on the inside of pipes, on heating elements or on expensive machinery create many problems.



Tube heat exchanger



Water feeder with biofilm

## Scale-related problems

- Loss of energy due to a longer heating process
- High costs of repairs and maintenance on machines and equipment
- Loss of water pressure due to decreased pipe diameters
- High cleaning costs and need for aggressive cleaning agents
- Decrease in overall industrial productivity



Heating element

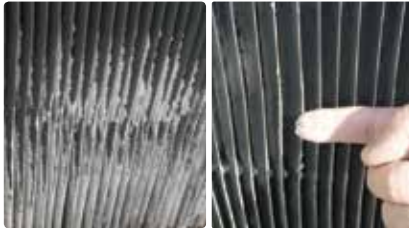
# The Vulcan treatment effects – before and after



Grill plate in a professional kitchen



Swimming pool water line



Cooling tower grid



Pool chlorinator



Toilet bowl



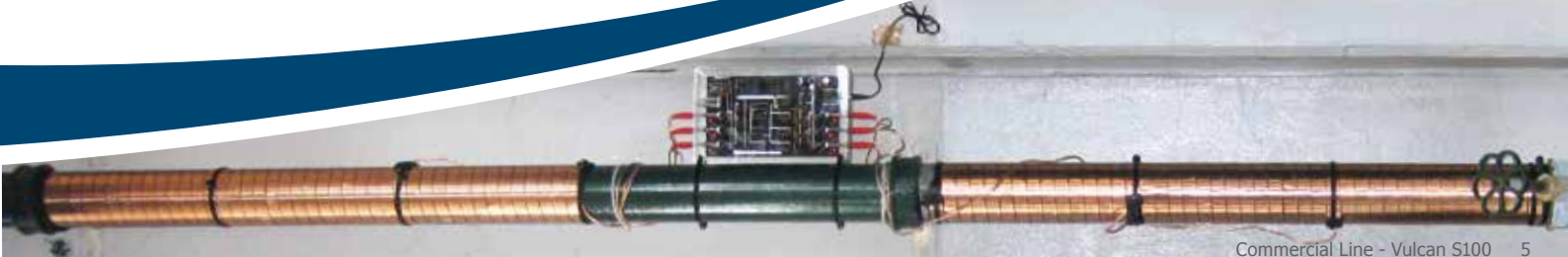
Grease trap



Greenhouse plants



Piping system



# The 3 Vulcan effects

## 1. Vulcan stops scaling in pipes and appliances

Without the Vulcan water treatment, scale particles in the water form sticky crystals that then build solid deposits. The Vulcan-Impulse-Technology modifies the crystallization of calcium and magnesium using the natural process of electrophoresis. The crystals become smoother and rod-shaped and can no longer attach to each other. The more rod-shaped crystals that are created, the stronger the positive effect of scale-prevention. Scale is now washed away in the water as a fine powder.

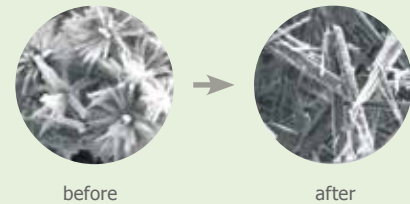
## 2. Vulcan gently sanitizes the piping system

The Vulcan water treatment changes the balance between the scaling process and natural resolving process. Mono-crystals can no longer form deposits, therefore the scale build-up process is reduced. The natural scale resolving process now needs only to deal with existing deposits and can effectively combat them. Thus scale is removed faster than it forms. The natural surplus of carbonic acid dissolves the scale from the scale. Gradually and carefully, the deposits in the pipes are cleaned out.



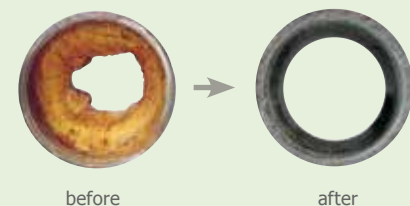
### 1<sup>st</sup> Vulcan effect

Vulcan modifies the structure of the calcium crystals



### 2<sup>nd</sup> Vulcan effect

Vulcan removes scale deposits in the piping system



### 3. Vulcan protects against rust damage and perforation

Copper and/or iron oxidation occurs in all metal pipes through contact with hard water. These oxides seriously affect the pipe surfaces and often lead to corrosion.

The Vulcan-Impulse-Technology generates an electrophoresis-effect which produces a protective metal-carbonate layer. According to the material of the pipe, this layer consists of copper carbonate, iron carbonate or zinc carbonate and settles on all shiny metal surfaces. It protects the pipe from harmful substances which could lead to corrosion.

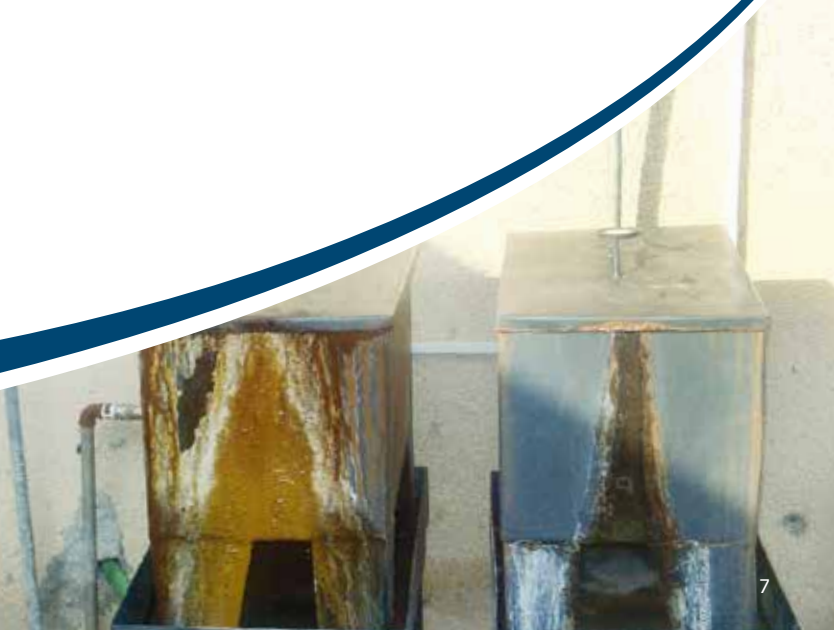
#### 3<sup>rd</sup> Vulcan effect

Vulcan produces a protective metal-carbonate layer



#### Vulcan in a water tank

Left: Tank without any treatment  
Right: Tank with Vulcan treatment



## Residential Line

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

### Houses and buildings

The piping system, water heaters, washing machines and other appliances are protected.

### Pools & Jacuzzis

Vulcan protects the equipment and pipes against harmful deposits. You can cut down on chlorine use and many other additives.



### Water heaters and heat exchangers

Vulcan controls scale build-up in water heaters in your home and reduces their maintenance.

### Solar water heater

Vulcan reduces scale build-up in collectors, it protects hot water tanks and vacuum tubes, and keeps the system from over-heating.



### Vulcan 3000



Max. pipe diameter: 1½" (~ 38 mm)  
Max. capacity: 3000 l/h (13 gpm)

### Vulcan 5000



Max. pipe diameter: 2" (~ 50 mm)  
Max. capacity: 8000 l/h (35 gpm)

## Application areas

- Houses and apartments
- Drinking water
- Bungalows
- Swimming pools & jacuzzis
- Small machinery
- Garden irrigation systems
- Garden sprinklers
- And many more



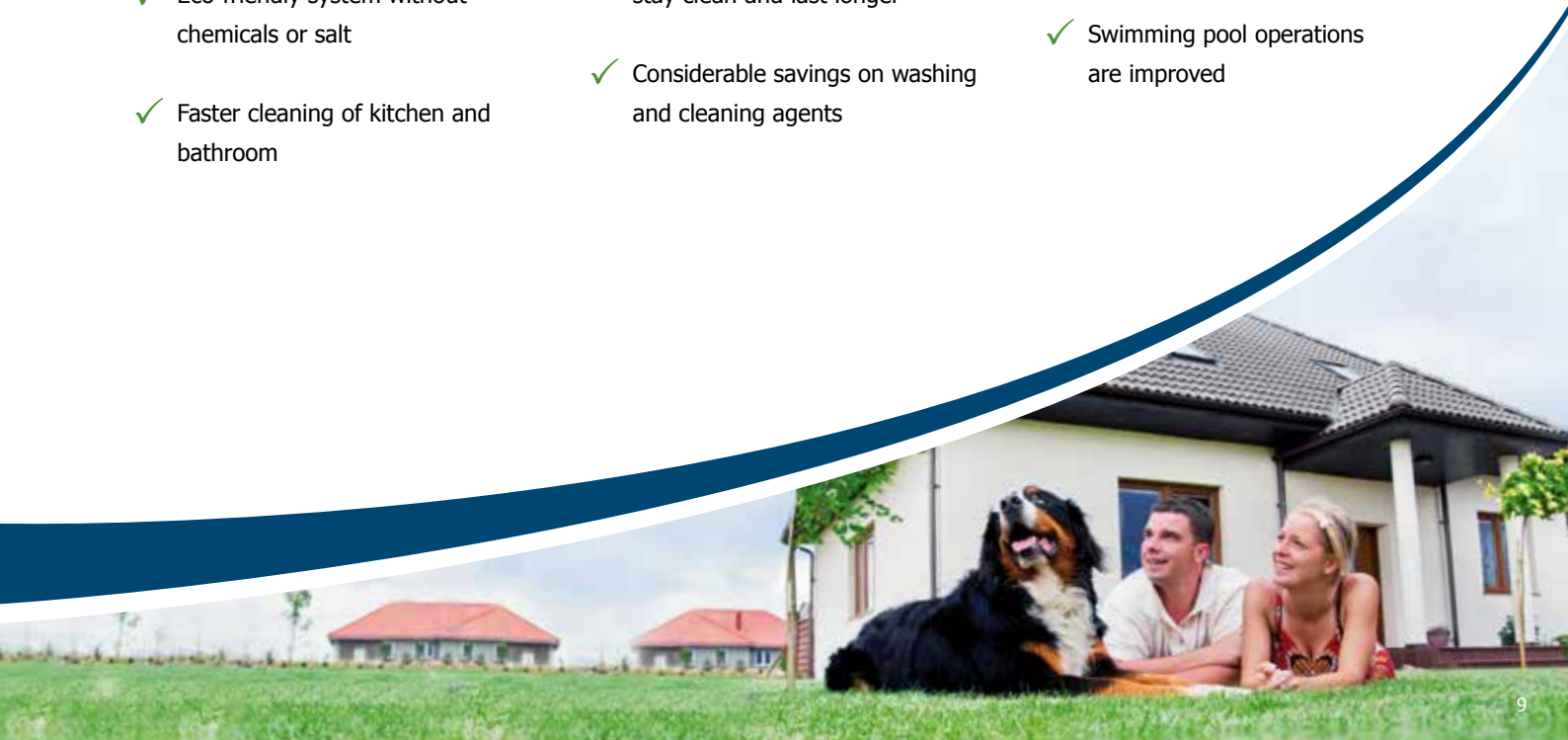
## Benefits



- ✓ Reduction of scale deposits throughout the whole piping system
- ✓ Eco-friendly system without chemicals or salt
- ✓ Faster cleaning of kitchen and bathroom

- ✓ Important minerals remain in the water
- ✓ Gardening systems and sprinklers stay clean and last longer
- ✓ Considerable savings on washing and cleaning agents

- ✓ Less time and effort spent on repairs and maintenance at your home, e.g. water heaters, washing machines, etc.
- ✓ Swimming pool operations are improved



## Commercial Line

The Commercial Line units treat pipe diameters up to 6" and have been designed to perfectly meet the requirements of small and large commercial facilities. These programmable units allow for individual adjustment according to the materials and diameters of the pipes.

## Application areas

### Buildings and housing

Condominiums & large buildings  
Educational institutions  
Public swimming pools  
Golf & tennis clubs  
Fitness clubs

### Medical

Hospitals  
Nursing homes  
Residences  
And many more



### Agriculture

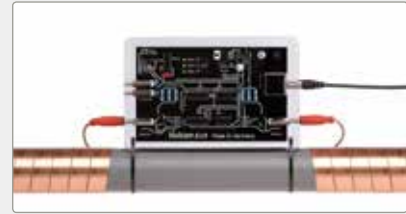
Plants  
Livestock  
Irrigation systems  
Machinery  
And many more

### Hospitality

Hotels and resorts  
Restaurants and cafés  
Cruise ships, maritime  
And many more



### Vulcan S10



Max. pipe diameter: 3" (~ 76 mm)  
Max. capacity: 15 m<sup>3</sup>/h (65 gpm)

### Vulcan S25



Max. pipe diameter: 4" (~ 100 mm)  
Max. capacity: 30 m<sup>3</sup>/h (130 gpm)

### Vulcan S50



Max. pipe diameter: 5" (~ 125 mm)  
Max. capacity: 70 m<sup>3</sup>/h (300 gpm)

### Vulcan S100



Max. pipe diameter: 6" (~ 150 mm)  
Max. capacity: 120 m<sup>3</sup>/h (530 gpm)

## Benefits



- ✓ Maximum working life of commercial machinery and equipment
- ✓ Less time and effort spent on cleaning
- ✓ Easier grease trap handling
- ✓ Reduction of maintenance on irrigation systems and water tapping
- ✓ Food and beverages keep their natural taste
- ✓ Improved performance of restaurant and kitchen equipment.
- ✓ More reliable water supply within sanitary facilities
- ✓ Savings due to more efficient use of energy for heating water



## Industrial Line

The Industrial Vulcan units treat pipe diameters up to 20" and have been designed to provide solutions for all kinds of applications in light and heavy industries. The customized adjustment to pipe diameters and pipe materials is based on 10 different system-integrated programs.

## Application areas

Hospitals  
Aluminium industry  
Chemical manufacturing  
Lumber industry  
Car industry  
Rubber production  
Injection molding  
Printing industry

Cooling towers  
Heat exchangers  
Food production  
Maritime and cargo industry  
Textile industry  
Refineries  
Waste water treatment  
And many more

Vulcan installed in a food factory



Sausage production



### Vulcan S150



Max. pipe diameter: 8" (~ 200 mm)  
Max. capacity: 180 m<sup>3</sup>/h (790 gpm)

### Vulcan S250



Max. pipe diameter: 10" (~ 250 mm)  
Max. capacity: 350 m<sup>3</sup>/h (1540 gpm)

### Vulcan S500



Max. pipe diameter: 20" (~ 500 mm)  
Max. capacity: 800 m<sup>3</sup>/h (3520 gpm)



## Benefits



- ✓ Productivity increase due to the reduction of scale incrustations
- ✓ Inexpensive installation without interruption of the production process
- ✓ Spend less on machinery maintenance
- ✓ More efficient use of energy costs
- ✓ Fast amortization of acquisition costs
- ✓ Easy cleaning and no need to apply acids in cooling towers
- ✓ Reduces chemical use in many areas
- ✓ Maximum working life of expensive production equipment
- ✓ More reliable water supply
- ✓ Extended cleaning intervals



## FAQs - Frequently asked questions

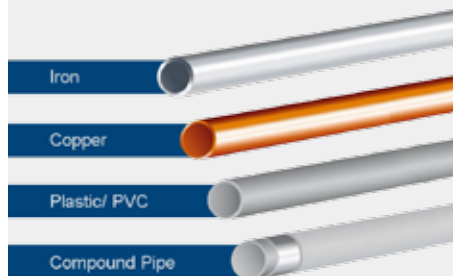
**How do I choose the right model size?** Please check the pipe diameter in the area where you want to install Vulcan. Then choose the unit that is designed for this size.

**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, but once a first layer of scale has built up, the incrustation process proceeds just as fast as on any other surface.

**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 with a particularly high degree of hardness.

**Does the Vulcan treatment have a softening effect on the water?** As the water treated by Vulcan does not lose any 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 change the measured water hardness, but modifies the shape of its components.

**How long does it take Vulcan to sanitize the pipes?** Vulcan removes scale and rust slowly without negatively affecting the pipes. The cleaning process takes about as long as it took the incrustations to develop.



**Which pipe materials are the devices suitable for?** Vulcan is suitable for all pipe materials: iron, copper, plastic, stainless steel, PVC, compound pipes, PE-X, etc.

**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. They operate on 24 VDC.

**What are the power costs of Vulcan per year?** Vulcan is completely maintenance-free. The cost of electric energy per year amounts to approx. USD 3 - 7 (2-6 €).

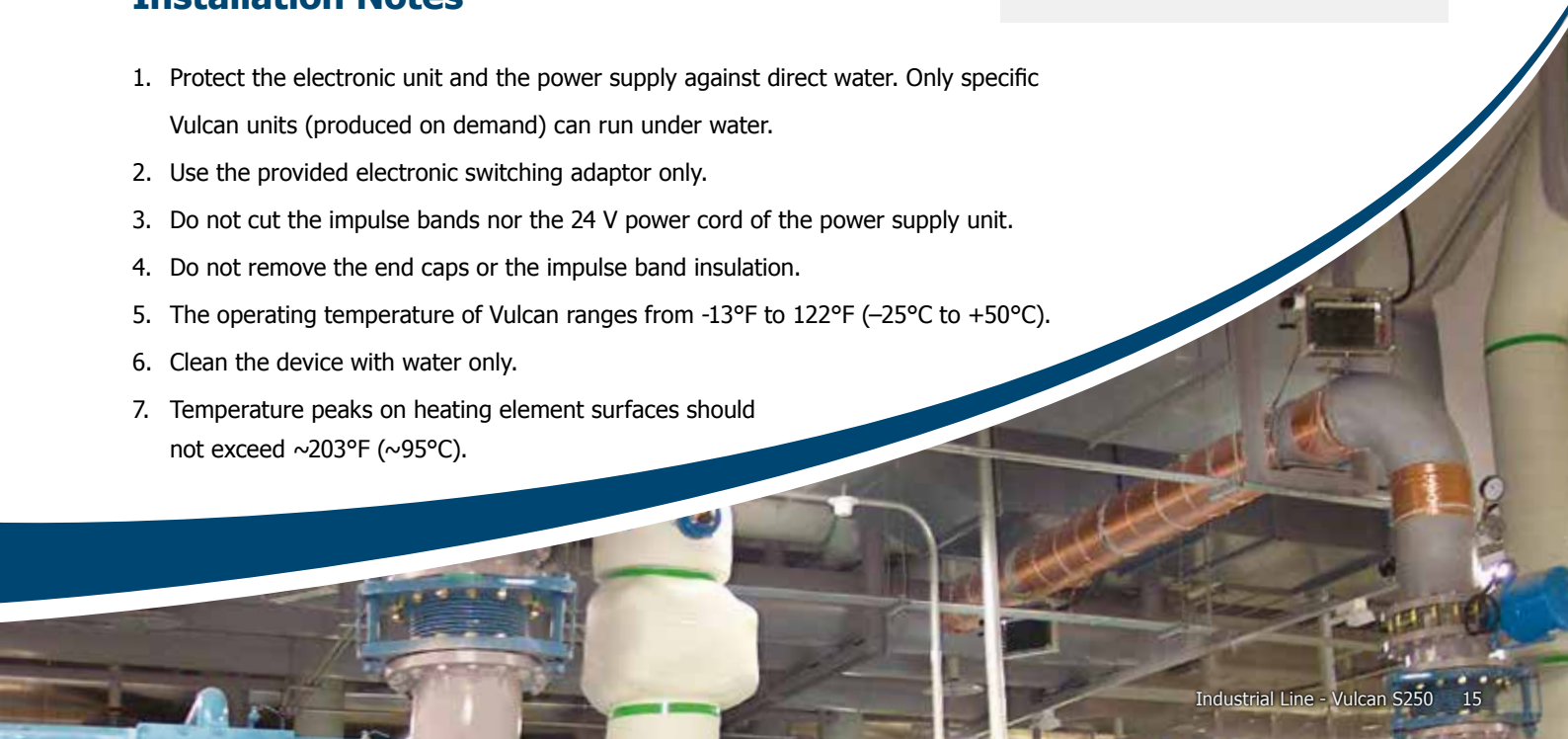
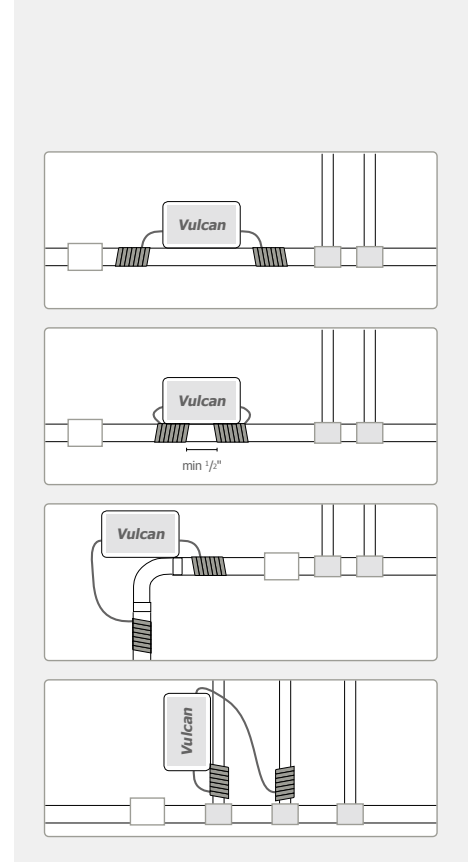
## Installation Examples

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

All these different installations are possible because the treatment impulses extend over several meters to either side of the pipes.

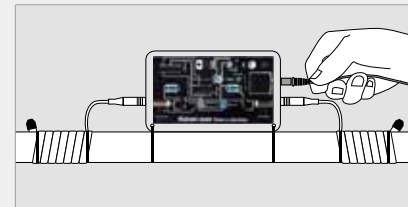
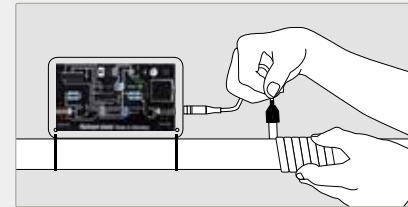
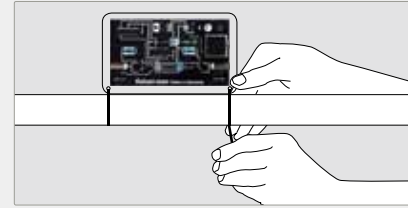
## Installation Notes

1. Protect the electronic unit and the power supply against direct water. Only specific Vulcan units (produced on demand) can run under water.
2. Use the provided electronic switching adaptor only.
3. Do not cut the impulse bands nor the 24 V power cord of the power supply unit.
4. Do not remove the end caps or the impulse band insulation.
5. The operating temperature of Vulcan ranges from  $-13^{\circ}\text{F}$  to  $122^{\circ}\text{F}$  ( $-25^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ ).
6. Clean the device with water only.
7. Temperature peaks on heating element surfaces should not exceed  $\sim 203^{\circ}\text{F}$  ( $\sim 95^{\circ}\text{C}$ ).



## Installation Instructions - Residential Line

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



It only takes 10 minutes to  
install a Vulcan 5000.  
No tools needed.



Residential Line - Vulcan 5000

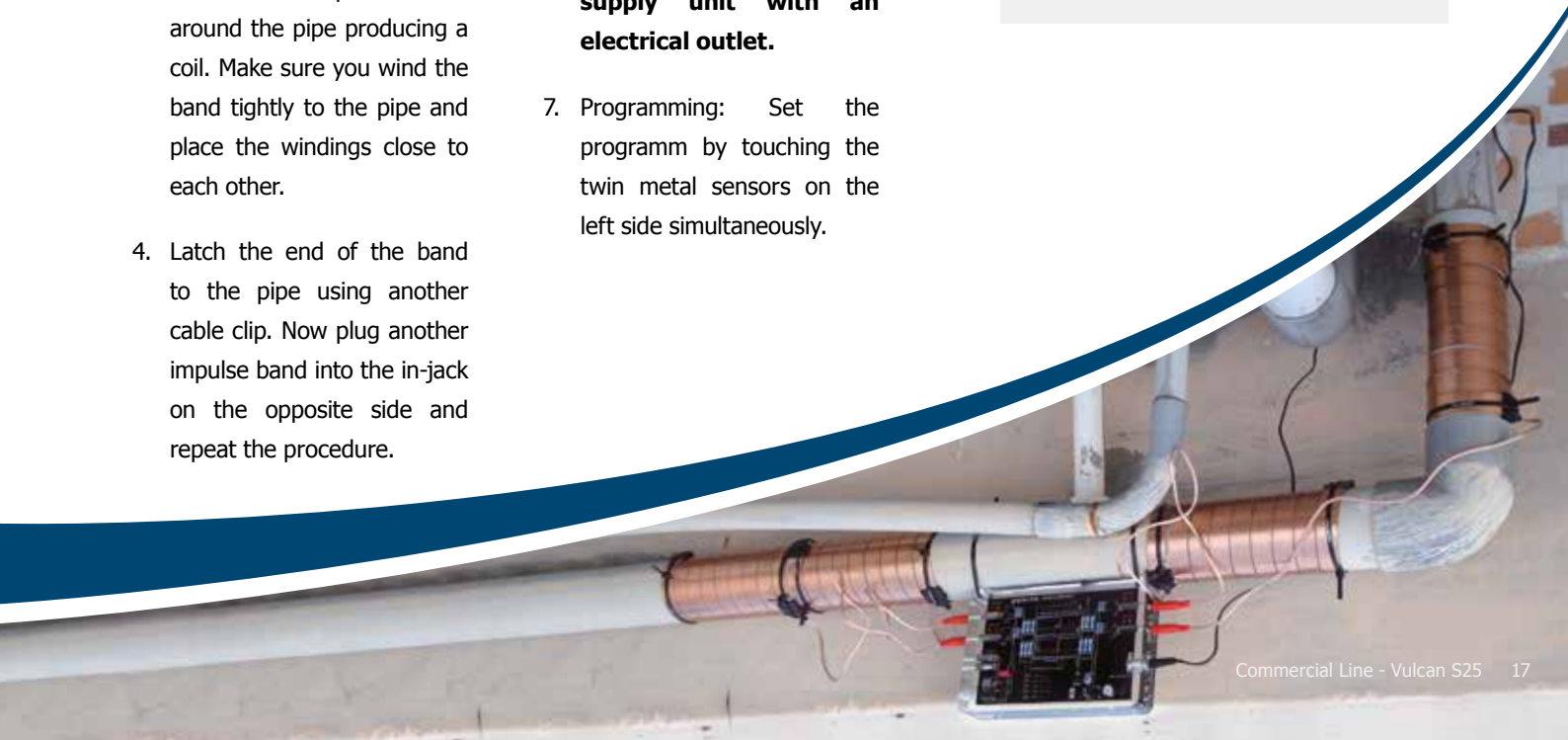
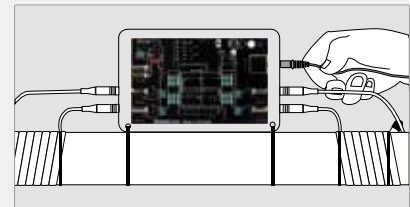
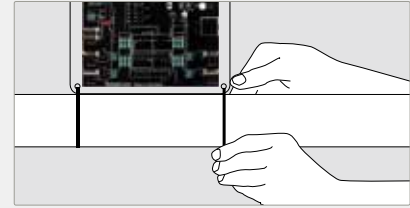
## Installation Instructions - Commercial Line and Industrial Line

1. Put the two cable clips through the fixing holes at the bottom of the electronic device. Now place the device onto the pipe. Use the cable clips to latch the device to the pipe.
2. Plug one of the impulse bands into the bottom impulse band in-jack and latch it to the pipe using another cable clip.
3. Wind the impulse band around the pipe producing a coil. Make sure you wind the band tightly to the pipe and place the windings close to each other.
4. Latch the end of the band to the pipe using another cable clip. Now plug another impulse band into the in-jack on the opposite side and repeat the procedure.

5. Plug another impulse band into the next impulse band in-jack and, according to the device type, repeat steps 2 - 4 until all impulse bands are in use. All impulse bands must be wound tightly around the pipe and fastened with cable clips.

6. **First plug the connector into the upper right in-jack of the device and then connect the power supply unit with an electrical outlet.**

7. Programming: Set the programm by touching the twin metal sensors on the left side simultaneously.



CWT - Christiani Wassertechnik GmbH  
Herr Rolf Christiani  
Köpenicker Str. 154  
10997 Berlin  
Germany



We have been using Vulcan water treatment equipment in our ice hockey hall Hartwall Arena since 2003.

We are using many sizes of several heating/cooling equipment in our water system:

- Vulcan 5000
- Vulcan S25
- Vulcan S100

We have reliability with these systems and have been most satisfied in using them.

Vulcan is a high-quality and great solution to different kind of premise.

Sincerely,

Hartwall Arena

A handwritten signature in blue ink, appearing to read "Rolf Christiani".



## References

These are some reference examples.

You find more references at:

**[www.cwt-international.com](http://www.cwt-international.com)**

### Phillip Best Plumbing

All your Commercial & Industrial Plumbing Needs

#### CWT - Physical water treatment system

I've been in the plumbing industry for 32 years and currently have five staff working for me at Phillip Best Plumbing. Since becoming available, we've purchased a number of CWT water systems to stop calcium deposits building up in a range of different piping systems. These deposits create many unwanted effects such as clogged pipes and irreversible damage to pipes and other plumbing parts. I found the CWT water treatments to be very effective in high temperature heating systems such as commercial combustion ovens in restaurants and even in a high temperature heating system at a local abattoir.

There are also huge time savings associated with CWT water systems. Installation time is cut by at least 90% when compared to similar units. The units, which allow scale particles to be washed away, are not only proving to be successful in commercial and industrial applications, but in private homes with scale and rust problems. I installed a CWT system to protect the hydraulic heating system, which lies under the cement slab of our home.

CWT has been a great cost saving unit initiative that will protect your piping system from ongoing scale and rust problems.

Your Phillip Best Plumbing Team





Within three months of installing the CWT water treatment system the iron residual and sludge disappeared. I was staggered by the results. The pipe was completely clear and there were no signs of the rust and scale at all. A reliable and clean sprinkler system is very important for us to maintain a healthy garden. The CWT system has saved me an enormous amount of time and money and I'm no longer cleaning sprinkler heads or replacing the solenoids in the reticulation system.

**Lance Butcher, Gelorup**



We are a facility management company responsible for the maintenance and repairs in medical institutions. Some months ago we have installed the Vulcan S250 in one of the hospital. We can identify a considerable benefit. For example, there are almost no scale deposits on the 2,500 shower heads to be seen any more. This saves manpower and costs of the exchange of sanitary equipment.

**Gegenbauer Health Care Service  
Hospital Management**



Our first installation in Spokane schools was in Shaw Middle School - a 50 years old building and with rusty and dirty looking water. The cooling tower was full of scale when we started and after few weeks, scale started to fall off in big junks and it cleaned out all the scale. Now the water is always clean and the janitor does not have to flush the piping anymore. **Spokane Public Schools, Washington - USA**

## Excerpt from our client list

Alcatel Mobile	MeridianSpa
Bayer-Leverkusen Soccer Club	Mövenpick Restaurants
Beutelsbacher Juice Factory	Opel Cars
Block House Restaurant	Park Hotel
Daimler Chrysler Cars	Paris Country Golf Club
Design Hotel Q!	Pilbara Commercial Laundry
Dynamit Nobel Chemical Industry	Public Service of Munich
Eberswalder Sausage Factory	Rhein Chemistry
Freixenet Sparkling Wine	Riverview Hospital
Gegenbauer Facility Service	Seaman's Church in L.A.
General Cement Organization	SHELL Gas Station
Grand Hotel Europe	Spokane Public Schools
Haecker Gelatin Production	Staedtler Fine Writing Production
Hartwall Ice Hockey Arena	Starbucks Coffee
Holstein Therme Spa	St. Joseph Hospital
Hotel President	Südmilch Dairy Farming
Hotel Terme Dolomiti	University of Munich
Ibis Hotels	Tim Hortons Restaurant
Ice Land Stadium	VARIOPLAST Plastic Moulding
McDonald's Restaurant	Viessmann Heating Systems
koelnmesse Exhibition Center	Volkswagen (VW) Cars
MAN Trucks	White Castle Restaurant
Mercure Hotel	Wolfies Waterfront Grill Restaurant
Meridien Hotel N'Fis	And many more ...



**Water as it should be**

## Models and Sizes

### Residential Line

### Commercial Line

### Industrial Line

**Vulcan 3000**

**Vulcan 5000**

**Vulcan S10**

**Vulcan S25**

**Vulcan S50**

**Vulcan S100**

**Vulcan S150**

**Vulcan S250**

**Vulcan S500**



Max. pipe diameter	1½" (~ 38 mm)	2" (~ 50 mm)	3" (~ 76 mm)	4" (~ 100 mm)	5" (~ 125 mm)	6" (~ 150 mm)	8" (~ 200 mm)	10" (~ 250 mm)	20" (~ 500 mm)
Max. Capacity	3000 l/h (13 gpm)	8000 l/h (35 gpm)	15 m³/h (65 gpm)	30 m³/h (130 gpm)	70 m³/h (300 gpm)	120 m³/h (530 gpm)	180 m³/h (790 gpm)	350 m³/h (1540 gpm)	800 m³/h (3520 gpm)
Voltage	24 Volt	24 Volt	24 Volt	24 Volt	24 Volt	24 Volt	24 Volt	24 Volt	24 Volt
Wattage	2.0 Watt	2.0 Watt	2.25 Watt	2.25 Watt	2.25 Watt	2.5 Watt	2.5 Watt	2.75 Watt	3.25 Watt
Impulse bands	2 x 1 m (~ 2 x 39")	2 x 2 m (~ 2 x 79")	2 x 3 m (~ 2 x 118")	4 x 3 m (~ 4 x 118")	4 x 4 m (~ 4 x 13' 2")	6 x 4 m (~ 6 x 13' 2")	6 x 8 m (~ 6 x 26' 3")	8 x 10 m (~ 8 x 32' 9")	10 x 30 m (~ 10 x 98' 5")
Band width	10 mm (~ 0.4")	10 mm (~ 0.4")	20 mm (~ 0.8")	20 mm (~ 0.8")	20 mm (~ 0.8")	20 mm (~ 0.8")	20 mm (~ 0.8")	20 mm (~ 0.8")	20 mm (~ 0.8")
Dimensions	130/80/30 mm (5.1/3.1/1.2")	150/85/30 mm (5.9/3.3/1.2")	190/120/40 mm (7.5/4.7/1.6")	200/125/40 mm (7.9/4.9/1.6")	200/125/40 mm (7.9/4.9/1.6")	240/150/40 mm (9.4/5.9/1.6")	240/150/40 mm (9.4/5.9/1.6")	295/200/50 mm (11.6/7.9/2.0")	320/220/50 mm (12.6/8.7/2.0")
Frequency range	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz
Required space	~ 250 mm (~ 10")	~ 350 mm (~ 14")	~ 500 mm (~ 20")	~ 800 mm (~ 32")	~ 900 mm (~ 35")	~ 1200 mm (~ 47")	~ 1800 mm (~ 71")	~ 2500 mm (~ 99")	~ 5000 mm (~ 16' 5")
Programs	1	1	3	5	5	10	10	10	10



**Prevents Scale and Rust**

**German production by**

Christiani Wassertechnik GmbH  
Koepernick Str. 154  
10997 Berlin, Germany

**[www.cwt-international.com](http://www.cwt-international.com)**

