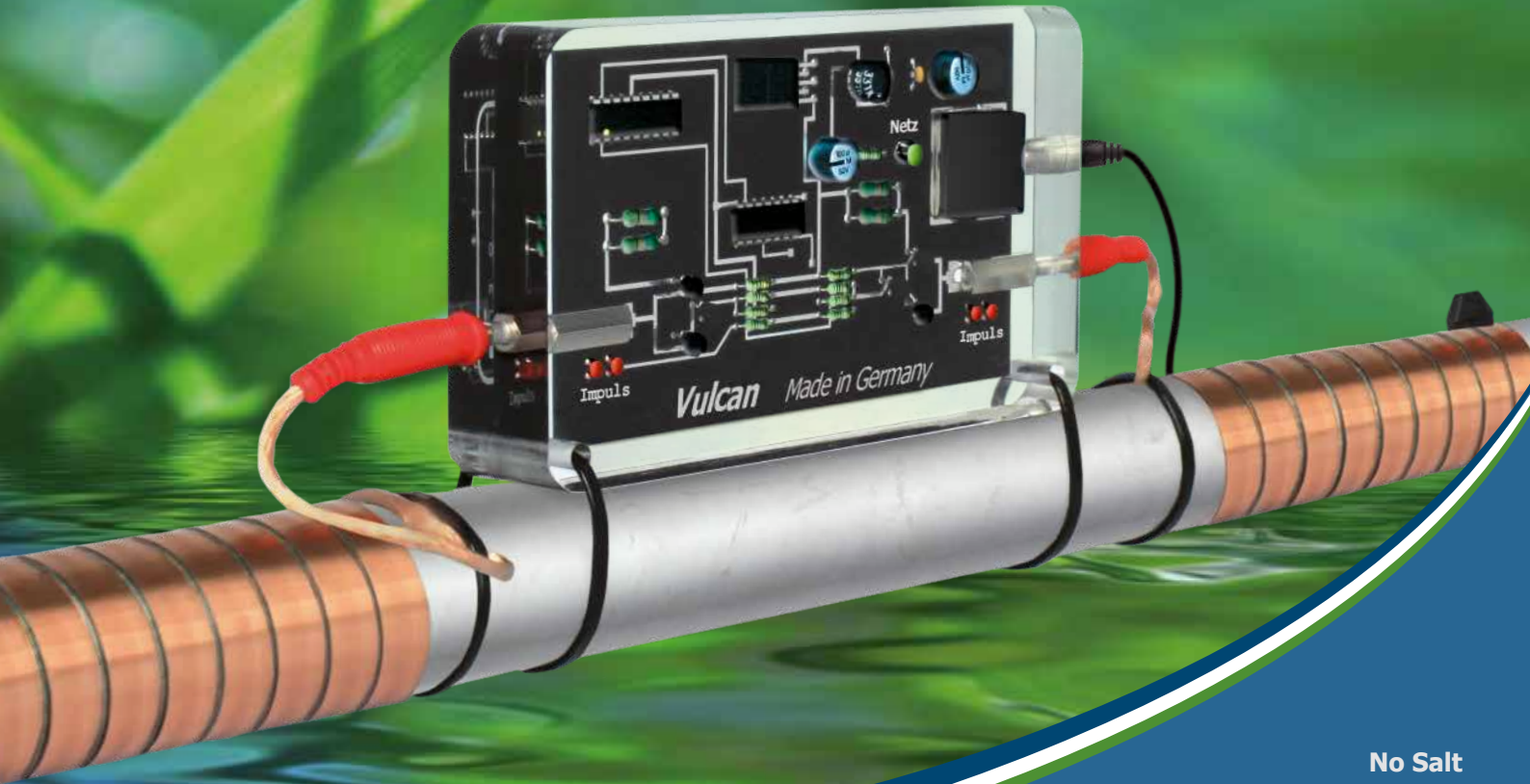




The electronic anti-scale system

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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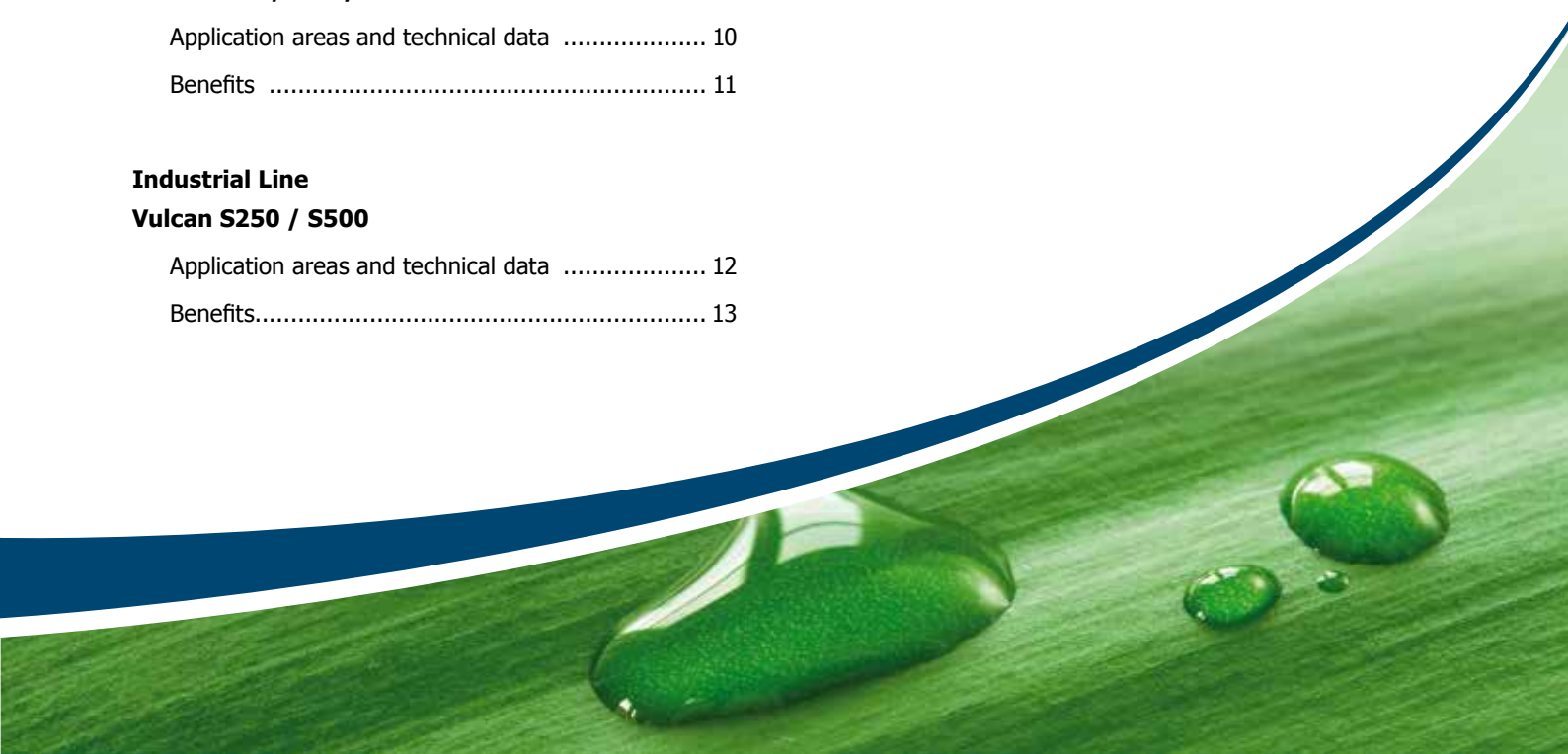
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Vulcan S250 / S500

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Vulcan – Against 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 against scale and rust. The method is based on the Vulcan-Impulse-Technology and treats your water without applying any chemicals or salt.

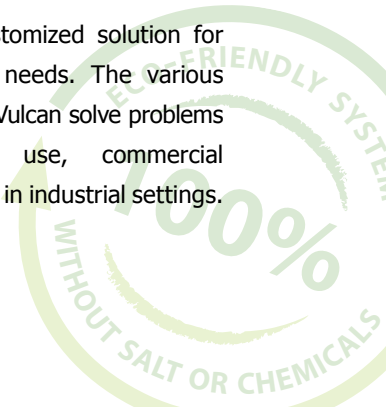
Special electronic impulses change the crystallization process of the calcium in hard water, causing the particles to lose their ability to stick to surfaces.

- ✓ 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 1/2" 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 3rd 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

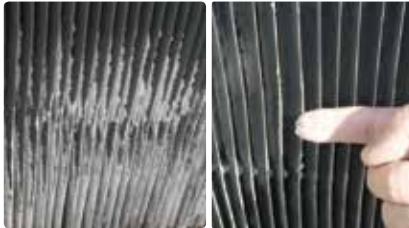
The Vulcan treatment effects – before and after



Grill plate in a professional kitchen



Swimming pool water line



Cooling tower grid



Pool chlorinator



Toilet bowl



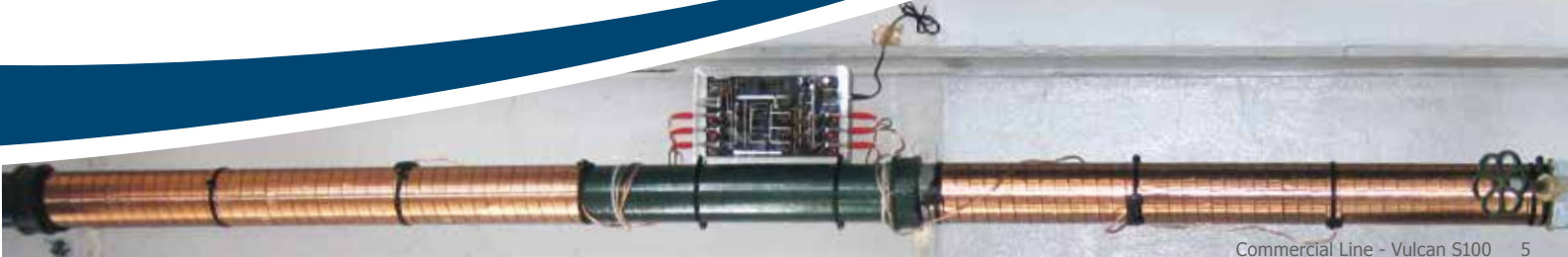
Grease trap



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.

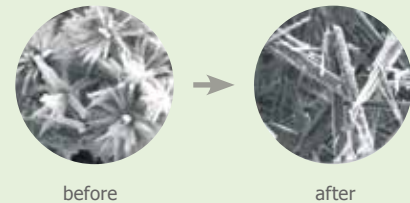
2. Vulcan gently sanitizes the piping system

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.



1st Vulcan effect

Vulcan modifies the structure of the calcium crystals



2nd Vulcan effect

Vulcan removes scale deposits in the piping system



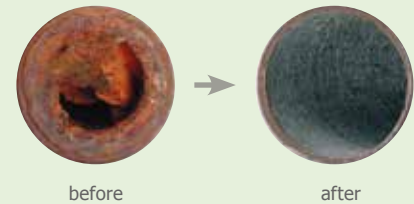
3. Vulcan protects against rust damage and perforation

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.

3rd 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 commercial 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 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	1 ½"
Max. capacity	800 gph (3000 l/h)
Wattage	2.0 Watt
Impulse bands	2 x 3' 3" (2 x 1 m)

Vulcan 5000



Max. pipe diameter	2"
Max. capacity	1350 gph (5000 l/h)
Wattage	2.0 Watt
Impulse bands	2 x 3' 3" (2 x 1 m)

Application areas

- Houses and apartments
- Drinking water
- Bungalows and resorts
- Swimming pools & jacuzzis
- Small machinery
- Irrigation systems
- Sprinklers
- And many more



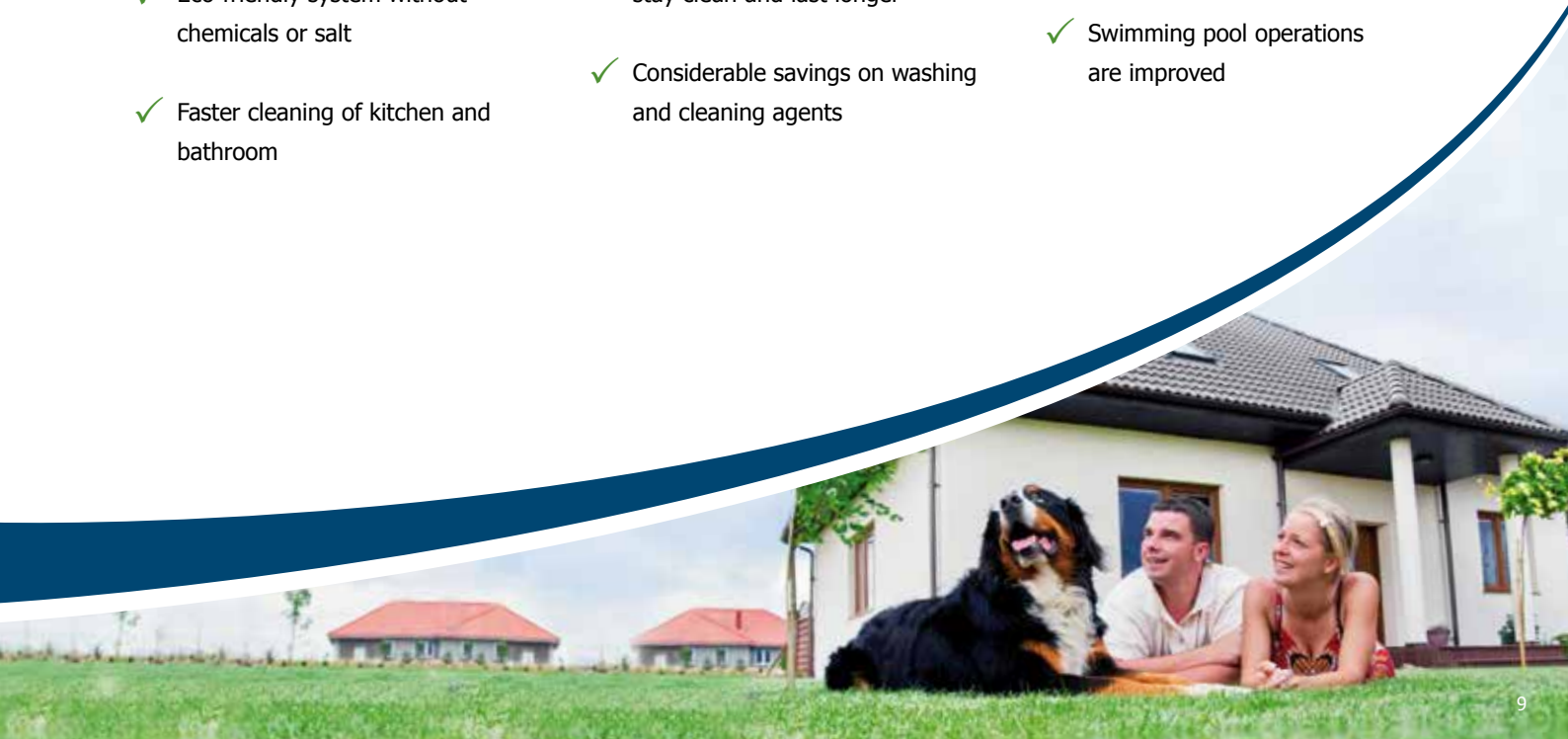
Benefits



- ✓ 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 courses
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
Passenger ships, maritime
And many more



Vulcan S10



Max. pipe diameter	3"
Max. capacity	45 gpm (10 m ³ /h)
Wattage	2.25 Watt
Impulse bands	2 x 3' 3" (2 x 1 m)
Programs	3

Vulcan S25



Max. pipe diameter	4"
Max. capacity	110 gpm (25 m ³ /h)
Wattage	2.25 Watt
Impulse bands	4 x 6' 7" (4 x 2 m)
Programs	5

Vulcan S100



Max. pipe diameter	6"
Max. capacity	450 gpm (100 m ³ /h)
Wattage	2.5 Watt
Impulse bands	6 x 13' 2" (6 x 4 m)
Programs	10



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 S250



Max. pipe diameter	10"
Max. capacity	1100 gpm (250 m ³ /h)
Wattage	2.75 Watt
Impulse bands	8 x 32' 9" (8 x 10 m)
Programs	10

Vulcan S500



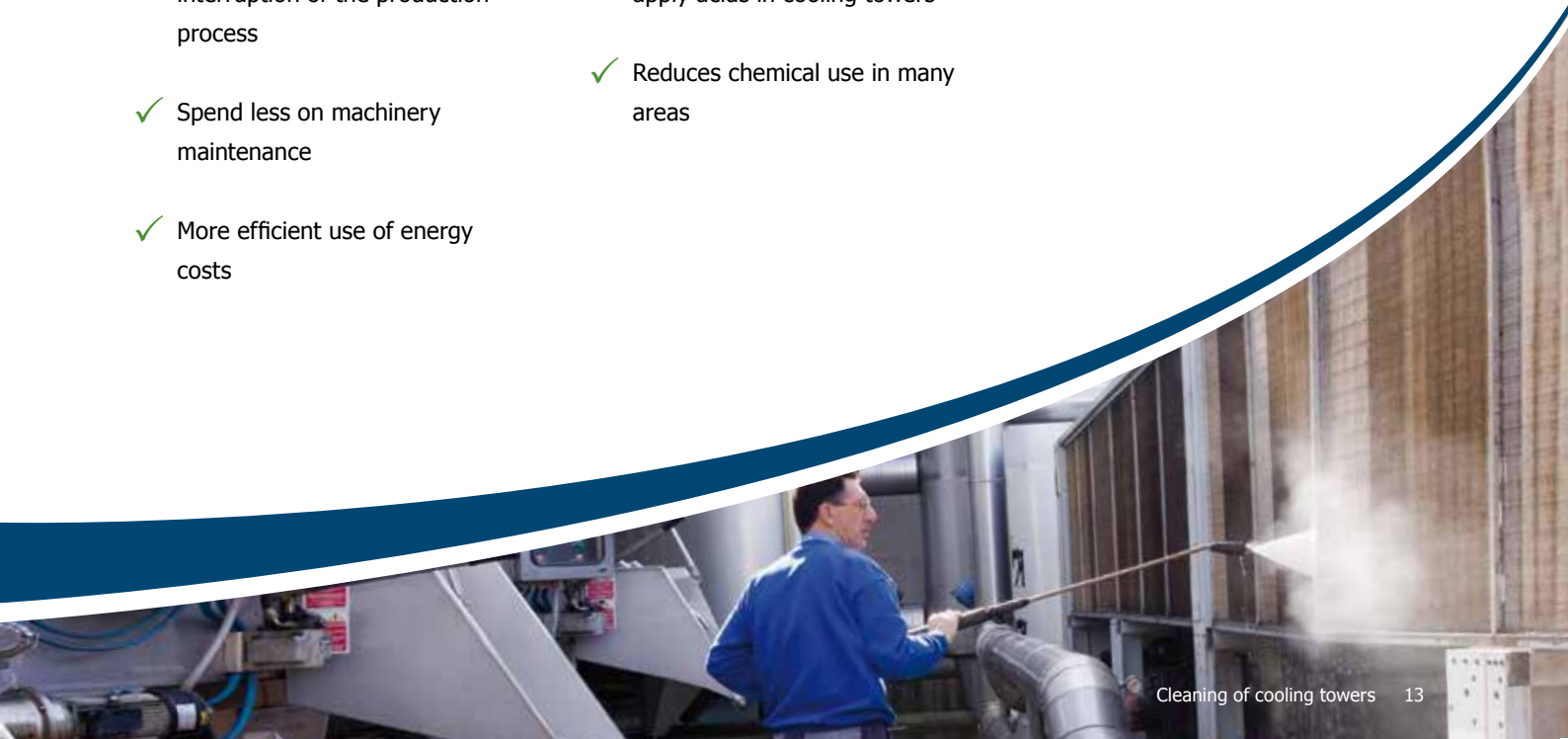
Max. pipe diameter	20"
Max. capacity	2200 gpm (500 m ³ /h)
Wattage	3.25 Watt
Impulse bands	10 x 98' 5" (10 x 30 m)
Programs	10



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



FAQs - Frequently asked questions

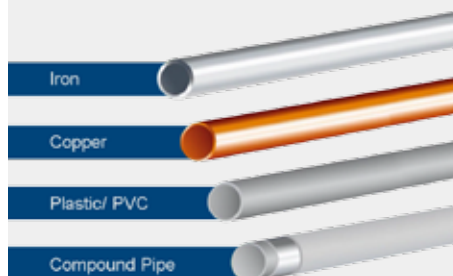
How do I choose the right model size? Please check the pipe diameter in the area where you want to install Vulcan. Then choose the unit that is designed for this size.

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.

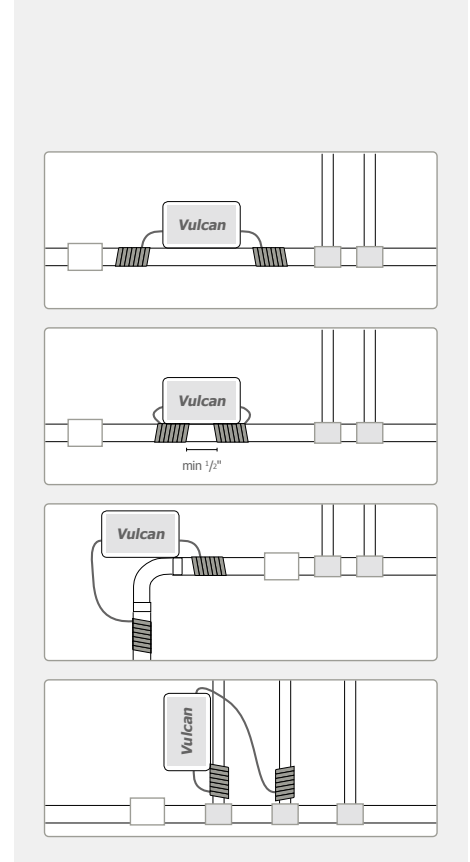
Which voltage range is the electronic plug-in power supply unit suitable for? All Vulcan power supply units are suitable for voltage ranges between 87 Volt – 260 Volt and 50 Hz – 60 Hz. They operate on 24 VDC.

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

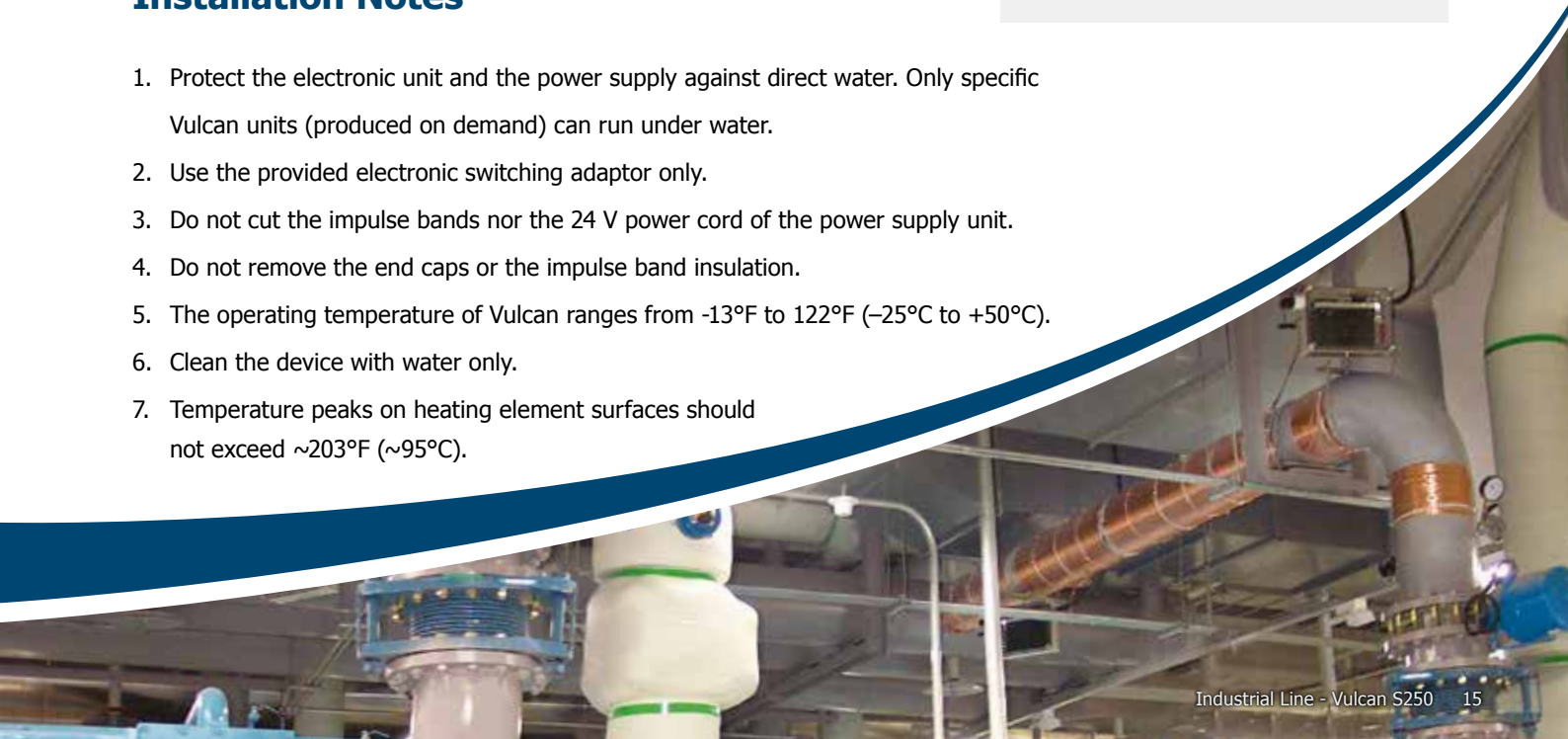
1. For optimal water treatment Vulcan is best installed near the water meter or at the main water supply.
2. The impulse band windings can be placed on the left side, on the right side or underneath the electronic device. Leave a safe distance of at least $\frac{1}{2}$ " (1 cm) between the bands.
3. 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.



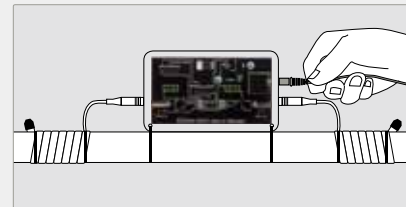
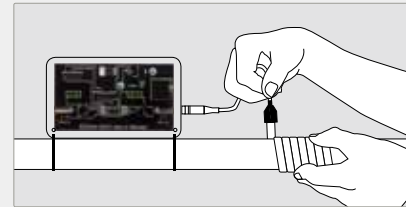
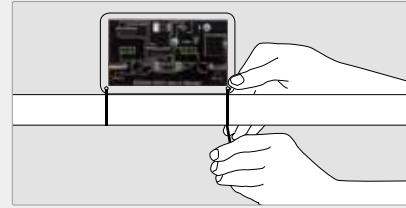
Installation Notes

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°F to 122°F (-25°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.



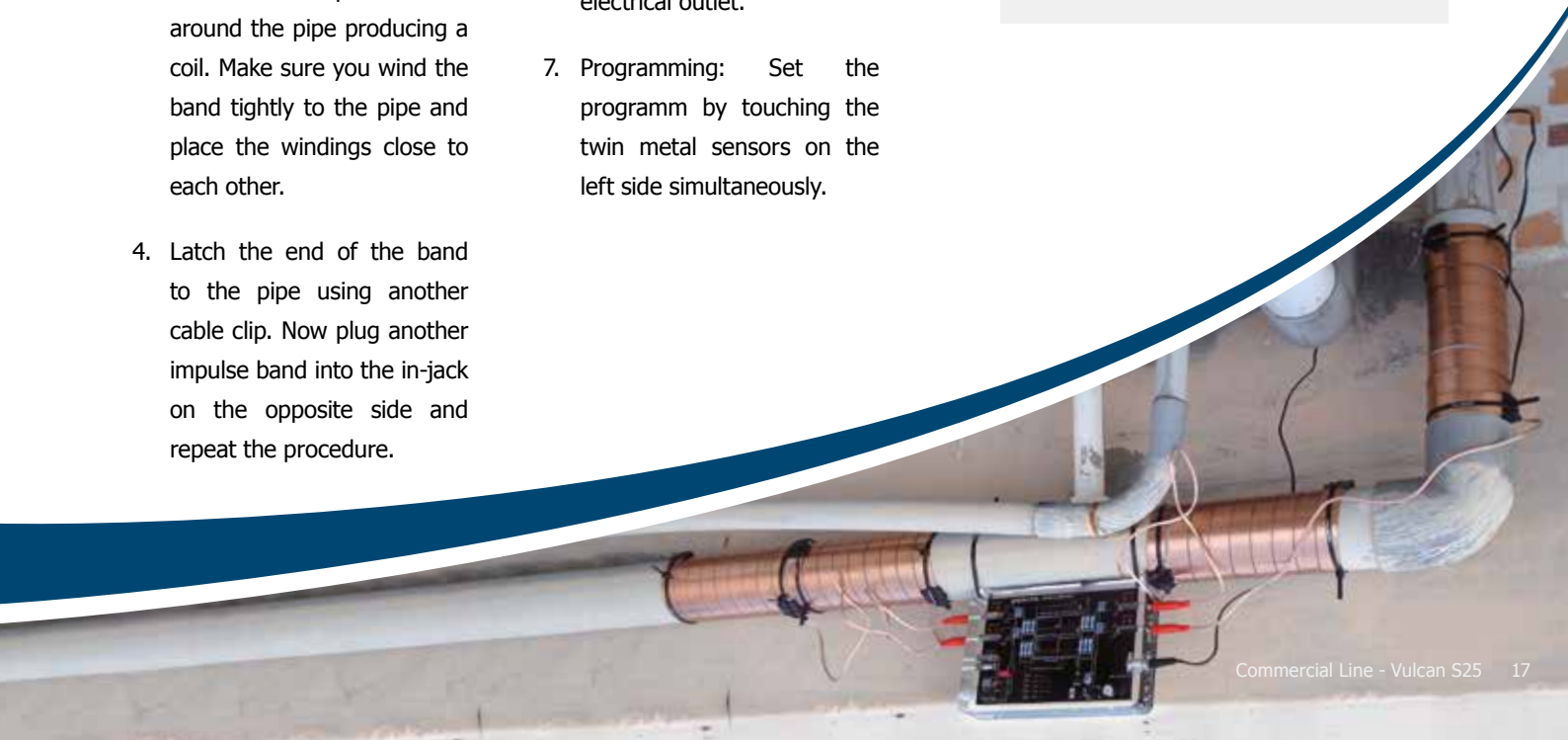
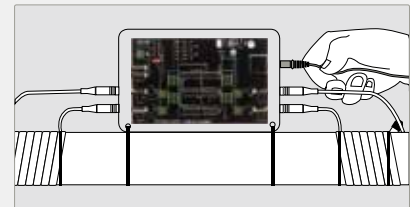
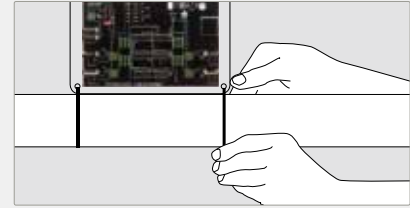
It only takes 10 minutes to
install a Vulcan 5000.
No tools needed.



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

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 very 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 chunks 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	Meridien Hotel N'Fis
Bayer-Leverkusen (Soccer Club)	MeridianSpa
Beutelsbacher Juice Factory	Mövenpick Restaurants
Block House Restaurant	Opel Cars
COSWIG	Park Hotel
Daimler Chrysler	Pilbara Commercial Laundry
Design Hotel Q!	Public Service of Munich
Dynamit Nobel	Rhein Chemistry
Eberswalder Sausage Factory	Riverview Hospital
Freixenet Sparkling Wine	Seaman's Church in L.A.
Gegenbauer Facility Service	SHELL
General Cement Organization	Spokane Public Schools
Grand Hotel Europe	Staedtler
Haecker Gelatin Production	Starbucks Coffee
Hartwall Ice Hockey Arena	St. Joseph Hospital
Holstein Therme Spa	Südmilch Dairy Farming
Hotel Cadolzburg	University of Munich
Hotel President	Tim Hortons
Hotel Terme Dolomiti	VarioPlast
Ice Land Stadium	Viessmann
McDonald's Restaurant	Volkswagen (VW) Cars
koelnmesse Exhibition Center	White Castle Restaurant
MAN	Wolfies Waterfront Grill
Mercure Hotel	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 S100



Vulcan S250



Vulcan S500



Max. pipe diameter	1½" 38 mm	2" 50 mm	3" 76 mm	4" 100 mm	6" 150 mm	10" 250 mm	20" 500 mm
Max. capacity	800 gph 3000 l/h	1350 gph 5000 l/h	45 gpm 10 m³/h	110 gpm 25 m³/h	450 gpm 100 m³/h	1100 gpm 250 m³/h	2200 gpm 500 m³/h
Voltage	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	2.5 Watt	2.75 Watt	3.25 Watt
Impulse bands	2 x 3' 3" 2 x 1 m	2 x 3' 3" 2 x 1 m	2 x 3' 3" 2 x 1 m	4 x 6' 7" 4 x 2 m	6 x 13' 2" 6 x 4 m	8 x 32' 9" 8 x 10 m	10 x 98' 5" 10 x 30 m
Band width	0.4" 10 mm	0.4" 10 mm	0.8" 20 mm	0.8" 20 mm	0.8" 20 mm	0.8" 20 mm	0.8" 20 mm
Measurements (electronic unit)	3.1/5.1/1.2" 80/130/30 mm	3.3/5.9/1.2" 85/150/30 mm	4.7/7.5/1.6" 120/190/40 mm	4.9/7.9/1.6" 125/200/40 mm	5.6/9.4/1.6" 150/240/40 mm	7.9/11.6/2.0" 200/295/50 mm	8.7/12.6/2.0" 220/320/50 mm
Frequency range	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz	3-32 kHz
Required space	11" 300 mm	1' 2" 350 mm	1' 8" 500 mm	1' 12" 600 mm	3' 11" 1200 mm	8' 3" 2500 mm	16' 5" 5000 mm
Programs	1	1	3	5	10	10	10



Vulcan

Against Scale and Rust

www.vulcan-texas.com

512-551-0923 1-800-603-1015

Techno Mechanical Solutions, LLC Austin TX

www.techno-ms.com

German production by

Christiani Wassertechnik GmbH

Koepernicker Str. 154

10997 Berlin, Germany

www.cwt-international.com

