

Electronic Water Treatment Systems

No salt
No magnetic field



No chemicals
No maintenance

Environmental Protective Technology

Introduction

We are a manufacturers of water treatment devices for the world wide application on vessels and in industry, for the prevention of lime stone, corrosion, deposits and further problems in water tubes and connected water processing devices, for example such as water boilers, dish washers or the water consumption for the food preparation in kitchens, - further in bathes and other hygienic requiring facilities.

Our production takes place in our factory in the south of Germany since 1991, where we produce under the control of the German **TÜV Product Service** (company for technical supervision), which is, responsible for the uncompromising security an function of German products, and not only, but mainly a warranty for the unsurpassable quality of our German products, still worldwide well known under the term “ **Made in Germany**”.

Still not satisfied with the quality and function of our product, certified by the **TÜV Product Service**, we achieved a confirmation of the laboratory test, made by the institute for economic development “**Steinbeis Stiftung**” about the efficiency in practical applications, and finally the **European patent No. 0523454** for our product, as a result of the unique and brilliant construction and efficiency of our technology, that we now proudly present to you with the following explanations.

Water treatment is a necessity

Problems and damages caused by lime aggressive waters in metal tubes

Every water consumer is earlier or later confronted with deposits of limestone, furred up tubes and low pressure, or corrosion and tube fractions.

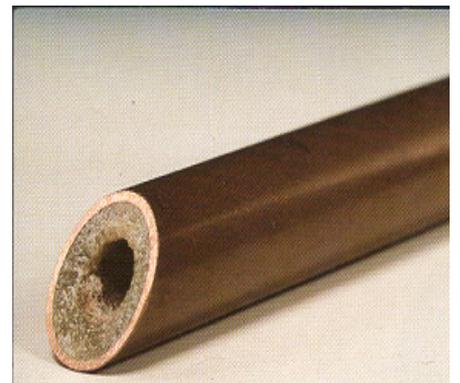
These damages, as corrosion, load of drinking water by iron oxide or copper oxide, or increasing energy costs because of lime deposits in boilers, and other water leading facilities etc. will not be perceived until they become visible in a form of water pressure loss, necessity of exchange of pumps, machines and facilities or renovation of tubes because of fractions, especially in hot water areas.

The cause

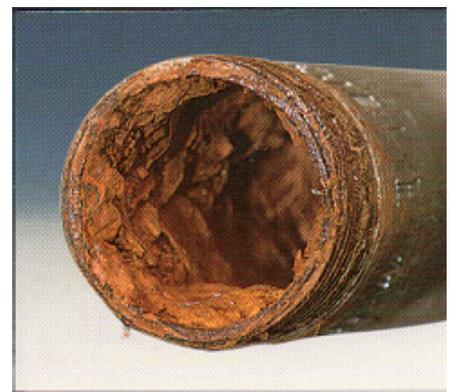


The fact, that every metal will be dissolved by the contact of oxygen or carbonated water (H_2CO_3) will inevitably end in corrosion of the water tubes.

No corrosion but a closure of the tubes will occur in case of lime waters with more than 25° d. H. (d. H. = German hardness of water), especially in hot water areas, where lime stone deposits will be generated extremely.



We know from our contacts with personal of shipping companies on the exhibition of “**sea technology**” in Hamburg since 1993, that not only lime is an evident problem on vessels, but also germs such as legionella etc. which find a nutritious ground in the lime und corrosion deposits in water tubes.



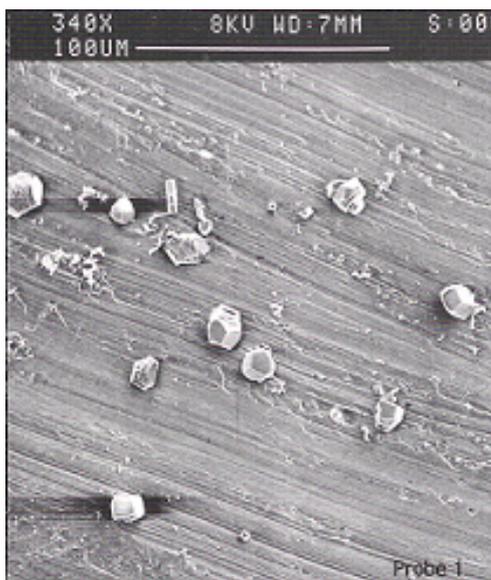
Expenses for repairs or exchange of facilities will surpass multiple the costs for a preventive installation of our water treatment devices.

The solution

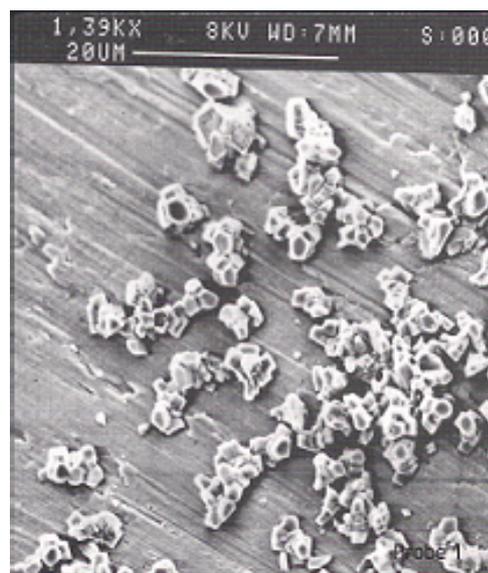
Energy cause changes

The examination with an electron microscope shows the difference between the crystal structures of the carbonates - calcium and magnesium before and after the water treatment.

The accumulation of crystals in sample 2 is the result of the water treatment that forms so-called conglomerates of materials, which are big enough and therefore not able to grow at the tube material.



Sample 1 normal water scale 100 μm



Sample 2 treated water scale 20 μm

We do not claim, to have created a extermination machine for germs, but it is obviously, that an alternating current stream, depending on the concentration of minerals in the water, until the maximum of 1 Ampere leaded into the water, will not friendly pass by the germs, without any existence threatening impact.

We did not develop our devices with the aim to offer a health machine, but it is quite clear that water leading facilities, without the above mentioned problems, well - in hygienic good conditions, supported by our devices, will be a great advantage for the technical function of the whole installation on vessels or elsewhere, and especially for the water consumer on board.

Desirable results



A new installed tube, controlled after some month. No corrosion but a slowly grow of a thin lime deposit is visible that prevents the beginning of corrosion and rusty water.



An old tube with slowly and after years became clean from lime and rust deposits and with is now again in condition to deliver clean water.

Application instructions

Our water treatment units are well proven quality products, which are high efficient for the decomposition of lime deposits and the prevention of corrosion.

The water treatment has no influence on the quality and composition of the water. The lime remains in the water and the characteristic of the water will not be changed.

Only the lime crystal structure will be modified in a way, that the crystals are not able to create deposits in tubes, boilers and all water leading facilities. The dry and modified lime can be cleaned easily from dishwashers, water taps, etc.

Lime marks

Because the water contains still lime and other minerals, lime marks may occur when the water evaporates. These marks can easily be cleaned with a brush or a hard sponge, without using additional cleaner substances.



Water taps, Showers, etc.

The water leading parts will remain free of lime deposits. Only at the edges of water taps may occur some lime particles where the water evaporates. These deposits should be cleaned within the usual cleaning periods with a brush.

Washing machines and Dish washers

The water leading appliances and facilities, heater etc. will remain also free from lime deposits without using salt or other additives.

In case of installation of a water treatment device in an old water tube system, where lime and rust deposits are already existing, it will be necessary to clean the particle filter of the washing machines, dish washer, water taps etc. to prevent the blocking of water by the loosed particles.

A cleaning of these facilities will be necessary from time to time and in case of low water pressure.

Please consider, that the efficiency will be transported through the tube system by the water flow.

Therefore it will be necessary to open the taps and flow the tube system for some minutes after the installation.

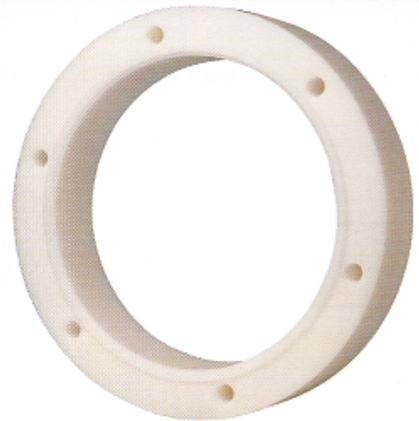


Coffee machines

Because of the different heating performance of the different coffee machines there is a more or less strong burn in of lime crystals possible, so that the efficiency is reduced. However the most types of coffee machines need less decalcification with acid than before.

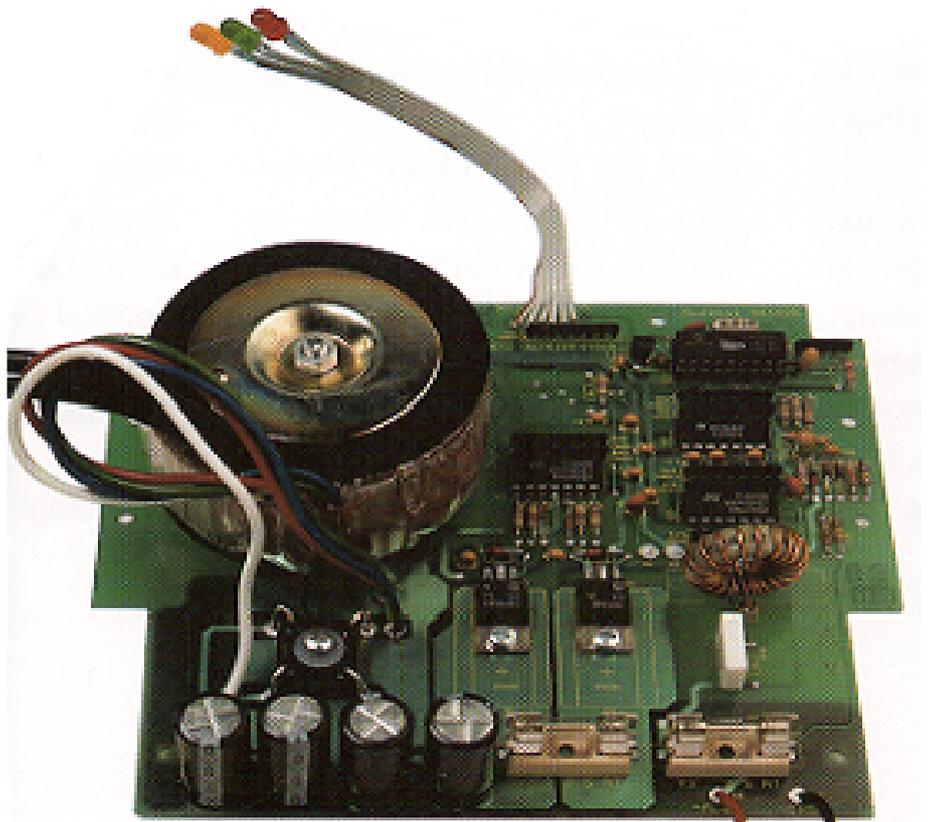
Quality prevails on the market

The target of a reasonable progress must be the development of new techniques and qualities. This aim is realised with our products.



We achieved a long life expectation and continuous corrosion protection, by using corrosion and acid resistant stainless steel (V2A) as well as high solid plastics (polyamide), temperature resistant until + 110 ° C.

These materials meet the demands of the German food law for the application in drinking water areas.

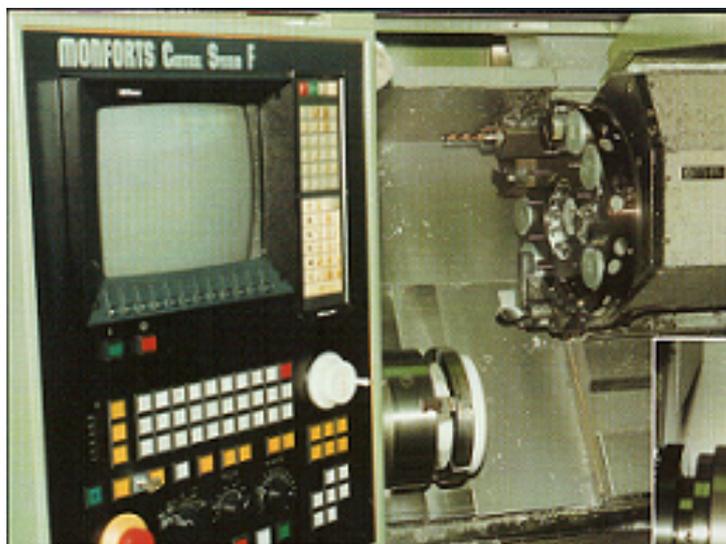


The electronic module, containing selected and screened high quality electronic components, is protected with a coating against negative environmental influences, such as salty humidity or steam etc.

The whole device does not require maintenance because of the integrated LLC-System (**L**ong **L**ife **C**ontrol-**S**ystem)

The production

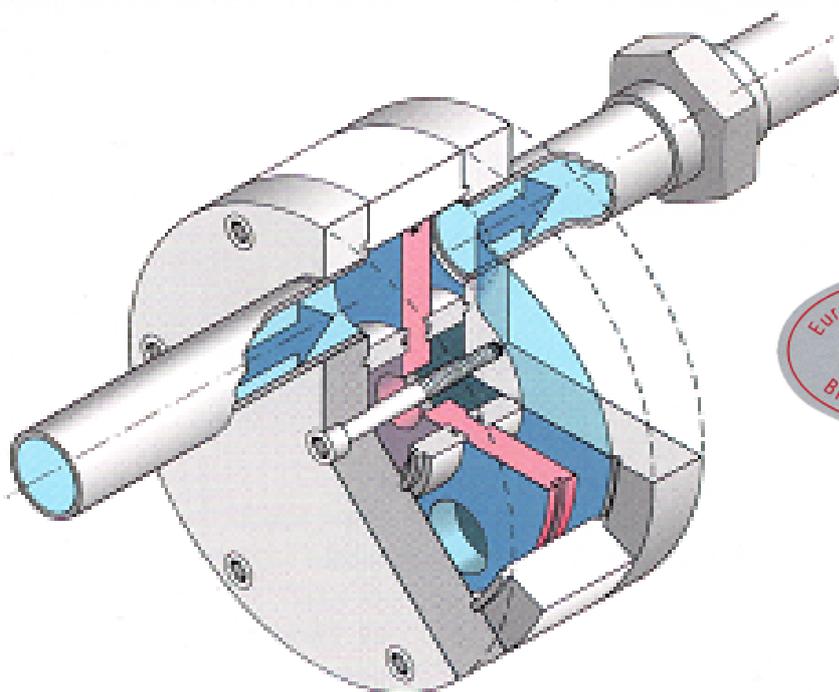
High quality production requires high quality means of production and continuous supervision.



Our high-quality means of production for the mechanical engineering, guarantee a precise and constant high quality of our products, supervised by the TÜV Product Service.



The intelligent construction of the device enables a maximum of efficiency. With the disc electrode in the middle of the device we reach a mechanical division of the water section with an internal double watercourse, and the water in both sections will be treated effectively by the current pulse from this middle disc electrode, - a construction with the [European patent No. 0523454](#), an unsurpassable high technology.



The electronic device



Extraordinary problems require intelligent solutions.



The electronic device is equipped with automatic internal self-tests of all functions, and a LED on the front panel indicates malfunctions.

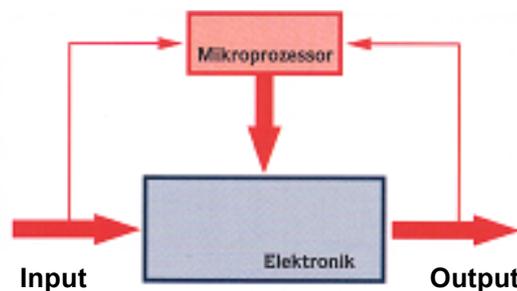
Because of the secure development, missing water in the water sections, or short circuit will not damage the electronic.

In case of temporarily breakdown, such as water missing, or temporarily cut of external current supply, the electronic device tries to initiate all functions in several intervals and in case of inability to realize the function, the system will shut down and indicate malfunction.

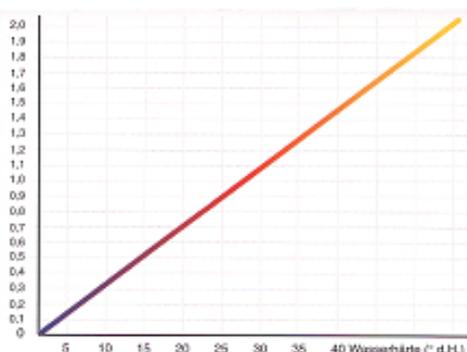
Different hardness of the different waters requires different measures to resolve the problems.



A microprocessor controlled current pulse, enables a best adaptation to the water consumption and the different hardness of water.

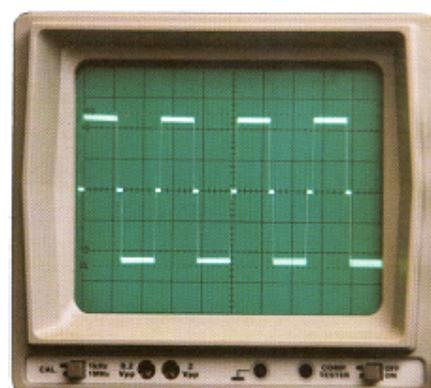


Current (A)



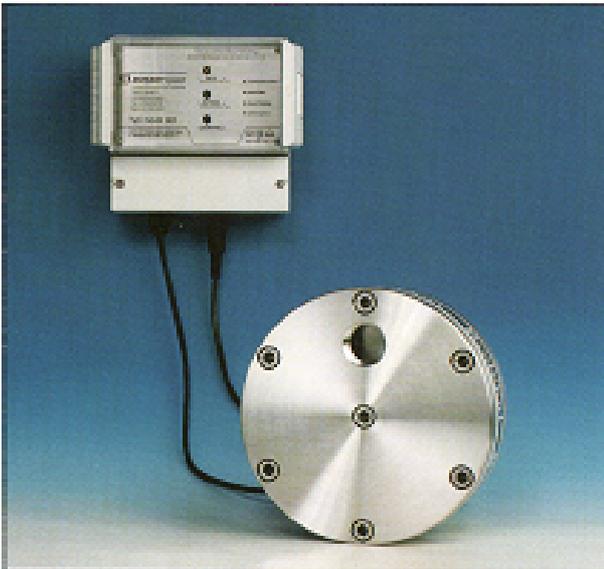
Hardness of water

The different concentration of minerals and other substances in the water increase the flow of electric current and the input and output values are continuously controlled by the microprocessor and the performance is permanent adapted to the problem.



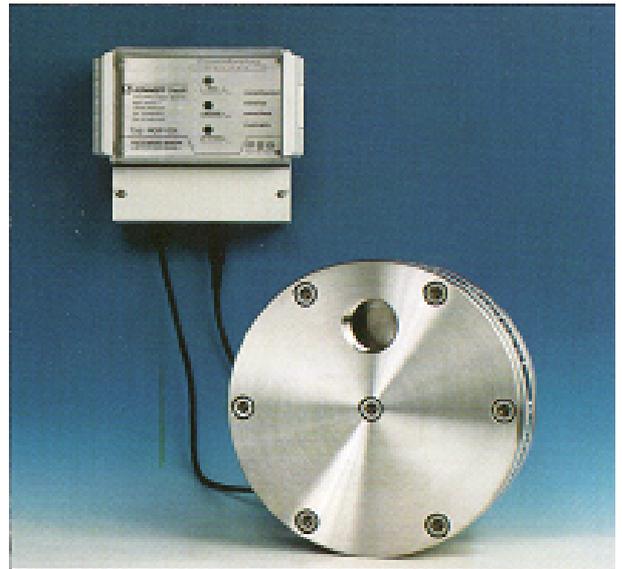
Current pulse on a scope

Series of water treatment devices



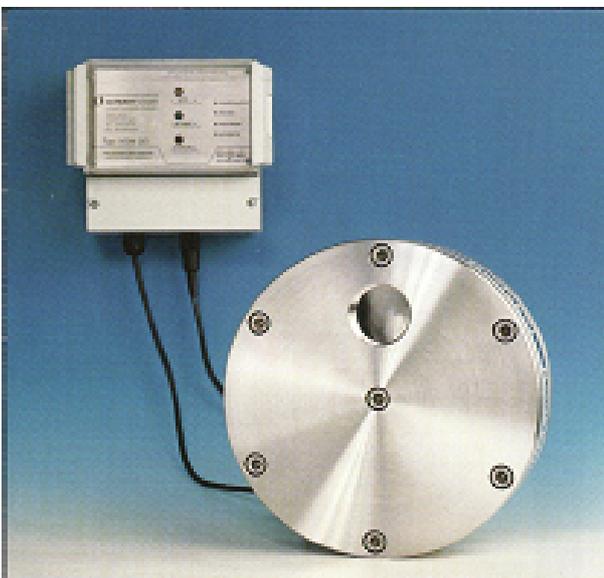
▶ **Electronic water treatment device R 100**

Type RK 100, with 1 inch tube connection is generally sufficient for the problems and the typical water consumption, and therefore applicable in 1 - 3 families houses.



▶ **Electronic water treatment device R 125**

Type RK 125, with 1¼ inch tube connection, with a higher capacity is best suitable for the lime problems in 6 - 8 families houses and the typical water consumption.



▶ **Electronic water treatment device R 150**

Type RK 150, with 1½ inch tube connection, is designed for big buildings, industrial plants or vessels.

▶ **Electronic water treatment device R 200**

Type RK 200, with 2 inch tube connection, is an extreme efficient device, with an pulse current until 2,1 Ampere leaded into the water sections and therefore applicable in vast buildings, industrial plants or vessels, with tremendous water consumption.



Technical data

Water treatment device

Type	R 100	R 125	R 150	R 200
Diameter	189 mm	228 mm	248 mm	278 mm
Height	75 mm	88 mm	88 mm	94 mm
Weight	11 kg	18 kg	22 kg	28 kg
Material:	High grade steel V2A Cr/Ni1810 INOX and Polyamide			
Tube connection size:	1 inch	1 ¼ inch	1 ½ inch	2 inch
Supply voltage:	230 VAC 50 / 60 c/s			
Performance max.:	17 VA	17 VA	17 VA	21 VA
Output voltage:	11 VA	11 VA	11 VA	11 VA
Operating pressure max.:	10 bars			
Hardness of water min. :	4 ° d. H. (d. H. = German hardness of water)			
Water temperature max.:	70 ° C			
Flow rate, litres per hour:	4500	6600	10200	13600

For higher flow rates and tube diameter of more than 2 inches, water treatment devices can be installed parallel.

The tube diameter between the water meter and the distribution facilities determines the choice of the device type.

In case the water consumption is much lower than the flow capacity of the installed tube, then the water consumption determines the choice of the device type and a reduction of the tube size will be necessary.

Technical modifications reserved. No liability for misprints.

Installation

Environment

The electronic module is resistant against humidity and corrosion by coating and the water section is dripping water protected.

Material combinations

Different tube materials may be used in connection with the device, without generating damages or corrosion caused by electrolysis.

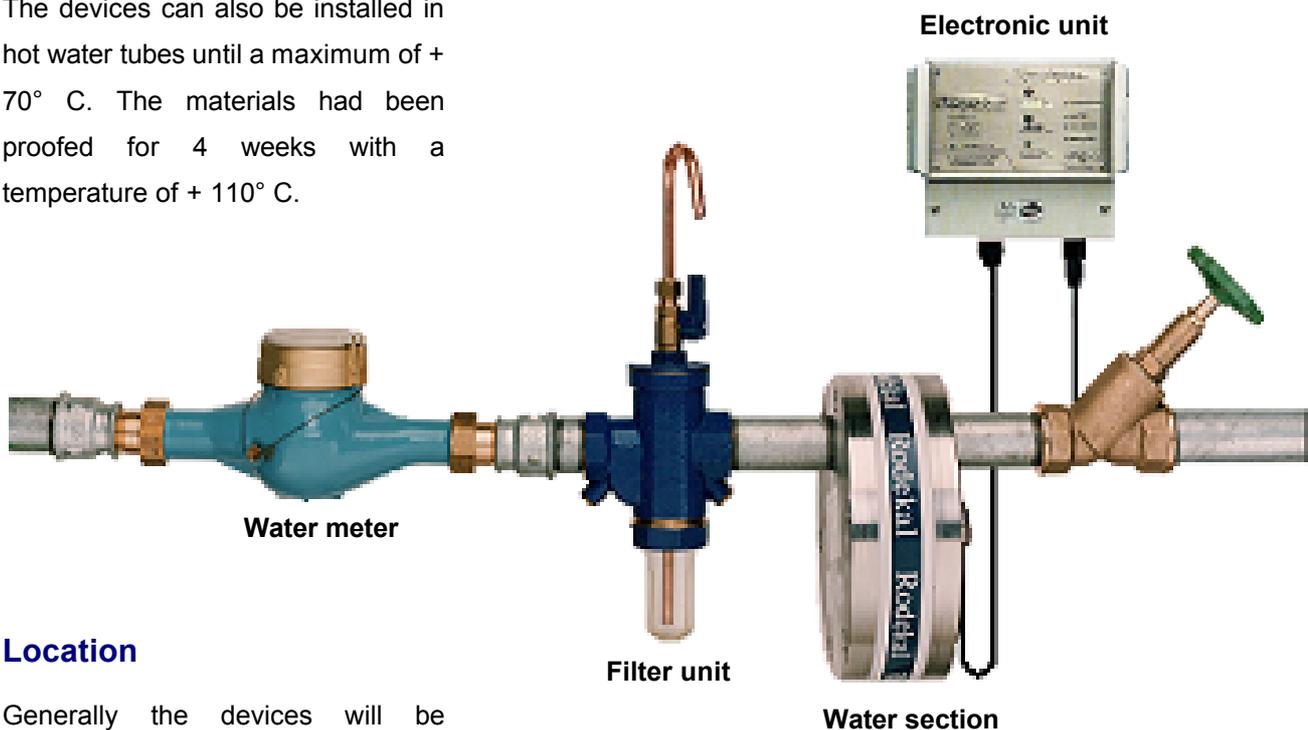
Water temperature

The devices can also be installed in hot water tubes until a maximum of + 70° C. The materials had been proofed for 4 weeks with a temperature of + 110° C.

Position of the device

The device is completely symmetrical constructed, so that the water inlet and outlet is not prescribed.

In case of installation in a horizontal water tube, it is necessary that the main part of the device will be positioned under the tube line, (hanging down) to prevent hollow space in the water sections, because no current flow reduces the efficiency.



Location

Generally the devices will be installed in the cold water main supply tube, after the water meter and a filter to protect the water section from dirty water from outside. The operating pressure should be maximal of 10 bars. The device had been proofed with a pressure of 30 bars.

Energy supply

For the energy supply of the electronic unit is a connection to a 220/230 VAC, 50/60 Hz necessary.

Warranty

20 years experience in development
and production of water treatment devices
culminate in our device generation of today.

**Our water treatment devices embody
absolutely best German high technology.**

We grant

2 years warranty

on material function and efficiency

for all our products

Made in Germany

Some of our, since many years satisfied customers

Since 1994 A. Nobel en Zn, NL-3330 Zwijndrecht, Netherlands, delivered 39 units on different vessels of their costumers.

Since 1998 Dredging and Contracting NL-2003 Haarlem / Vessel: Leonardo da Vinci

Since 1998 Sodracco International S.A.S. F-5900 Lille, France / Vessel: Marco Polo

**Since 2001 Westfalia Separator Ibérica S. A., E-08400 Granollers, Spain
Vessel: BN320 & BN322 from IZAR, Bilbao**

Since 2001 Westfalia Separator NV-SA, B-2900 Schotten, Belgium - Vessel: KAISHUU

Since 2002 Alfa Laval Iberia S. A. E-28034 Madrid, Spain

Since 2003 Jan de Nul N. V. B-9308 Hofstade Aalst, Belgium

**Since 2005 Codralux S.A. L-8413 Steinfort, Luxembourg - Vessel: Francis Beaufort,
Filippo Brunelleschi**

Please consult us for technical advice, offers or further information

Electronic water treatment

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