

ION SCALE-BUSTER®

Galvanic Water Treatment

European
Patent
No. 0680457



The galvanic water treatment: No external electricity! No magnets! A self-cleaning zinc sacrificial anode system, which guards water pipes and systems against corrosion and lime scale build-up. This is the environmentally acceptable alternative to chemicals for drinking and industrial water systems.

More than 35,000 units already in operation.

MORE THAN
14
YEARS OF
SUCCESS

**ION SCALE-
BUSTER®**
Technology



Manufactured
according to
ISO 9001

The proven Zinc Sacrificial Anode Technology ION Scale-Buster®

ION Scale-Buster® patented zinc sacrificial anode can be safely incorporated in any water system.

Customer references covering 14 years of product usage support the efficiency and success of the ION Scale-Buster® in industrial and residential water systems. Ever since it has been proven in protecting boilers, ship hulls and pipelines against corrosion, the galvanic water treatment system has also proven itself as an efficient and inexpensive alternative to using chemicals in protecting (metallic) pipes.

The 35,000 ION Scale-Buster® anode units already in use document the success and customer satisfaction of the galvanic water treatment in industrial, trade and residential buildings.

On location advice and planning is taken care of through a national network of competent business partners in technical and building design, as well as industrial consulting.

Advice for business partners, as well as the support given to long term industrial clients and key accounts, is organised through the ISB Watertec GmbH head office in Düsseldorf.

Common Plumbing Problems

ION Scale-Buster® takes care of corrosion and lime scale problems.

Corrosion

The reason for the ever increasing huge global demand for iron and copper is not just the construction of new production plants but also the constant necessary replacement of corroded construction parts. Corrosion occurs through the chemical reaction of metallic substances coming into contact with certain chemicals (e.g., chloride, sulphur, oxygen, acids) in the presence of water.

General corrosion in water pipelines is the result of the reaction of metals with oxygen and electrolytes, an electrochemical process, which needs to be slowed down.

Contact corrosion is a result of different metals coming into contact with each other e.g., iron with copper (local element).

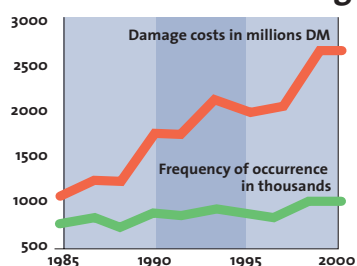
Particle induced corrosion is caused by foreign particles in the water pipes. These corrosion-causing particles can occur through any corrosion within the system itself (e.g., in cooling systems, heating systems), as well as being introduced through an external source (e.g., the addition of drinking water)

Lime Scale Deposit

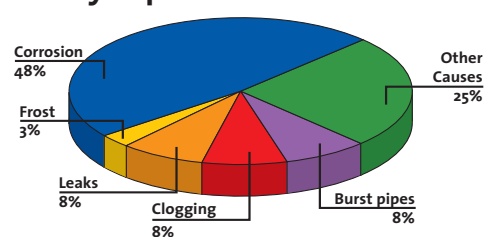
In addition to corrosion problems, high levels of calcium and magnesium ions (the causes of water hardness) can lead to lime scale in pipes. A major cause of lime scale can be a rise in temperature within the system. Other causes can be changes in pH values, carbonic acid levels or even pressure levels.

Corrosion and lime scale deposits are the major factors in creating various common water pipe problems: leaks, clogged pipes and appliances, not to mention brown water, etc.

Damage caused by tap water



Water pipe damages reach the billion level every year in Germany.



Corrosion is the number one cause of damage. Nearly every second case is due to leaks, caused by pipes rusting through.

Source: GDV

The Zinc Sacrificial Anode Technology

One of the most important characteristics of zinc is its ability to prevent corrosion. Using zinc in corrosion protection lengthens the lifespan of steel constructions, vehicles, bridges, buildings, etc.

Zinc has been used, in the form of sacrificial plates, for more than 80 years in the shipping industry to protect ship hulls from corrosion and deposits.

Other sacrificial materials (non-precious metals) have also been used protect hot water boilers. A well known example here is the magnesium anode bar.



Magnesium anode bar used in hot water tanks



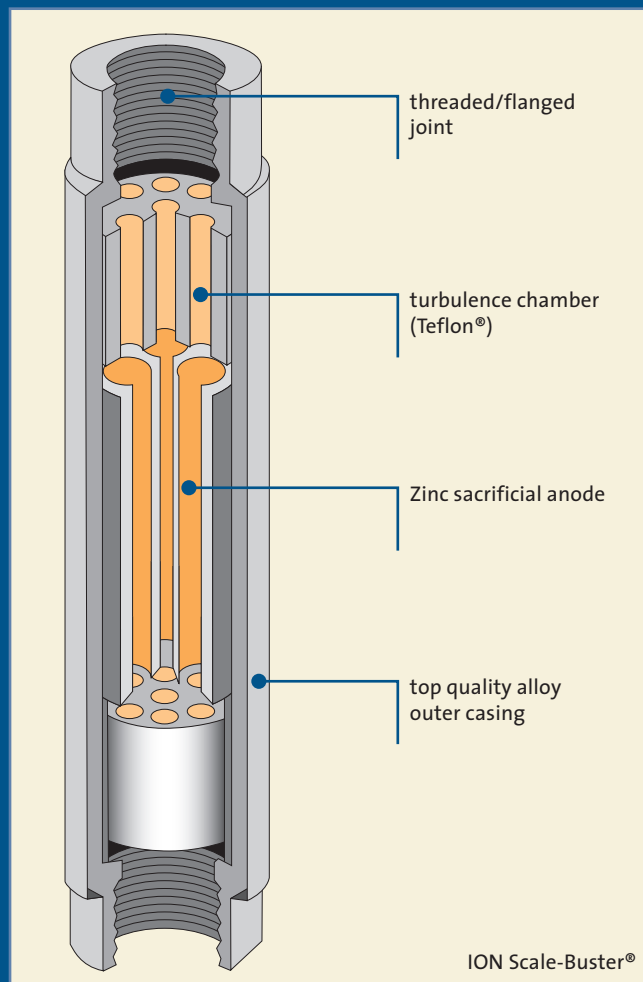
80 years of zinc anode competence in ship building

List of ION Scale-Buster® users

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| • ABB Gebäudetechnik | • MESSE DÜSSELDORF GmbH |
| • Hotel Adlon, Berlin | • MUHR & SÖHNE GmbH |
| • ALSTOM GmbH | • MVA, Bonn |
| • ALBA INFRASERVE GmbH | • PEGUFORM GmbH |
| • ALLIANZ IMMOBILIEN GmbH | • POSCO, Korea |
| • ATMOS MEDIZINTECHNIK GmbH & Co. KG | • RHEINBRAUN AG |
| • BAST BAU GmbH | • ROBERT BOSCH GmbH |
| • BAYER AG | • RIGIPS GmbH |
| • BAYER OIL GmbH | • RP VERPACKUNGEN GmbH |
| • BERG. RH. WASSERVERBAND | • RWE AG |
| • COMMERZBANK AG | • STADTREINIGUNG HAMBURG |
| • DANFOSS GmbH | • STADTWERKE SCHIFFERSTADT |
| • DAEWOO, Korea | • THYSSEN-IMMOBILIEN GmbH |
| • FS KARTON GmbH | • USF Gütling GmbH |
| • GALA GmbH | • TECHNIP GmbH |
| • HYUNDAI, Korea | • TREVIRA GmbH & Co. KG |
| • JAPAN TOBACCO IND. | • VICTORIA VERSICHERUNGEN/ ERGO GmbH |
| • KNIPEX | • WACKER CHEMIE GmbH |
| • THYSSEN KRUPP NIROSTA AG | • ZANDERS FEINPAPIER AG |
| • MAN ROLAND AG | • and many others |

Construction and Operation

The ION Scale-Buster® is a zinc sacrificial anode system, incorporated into the water circulation system. The zinc anode treats the entire volume of water in the targeted system. The integrated Teflon® turbulence sections are non-stick and with the turbulence effects assure the self-cleaning characteristic of the ION Scale-Buster®. The Teflon® turbulence chambers also create cavitation, this improves the precipitation effects of scale particles. The patented construction of the ION Scale-Buster® assures enduring active performance.



A galvanic element is created (≤ 1 volt), when the ION Scale-Buster® comes into contact with an electrolyte (water). In this process, the zinc anode (serving as the pre-destined sacrificial target in the treated water system) is sacrificed (dissolved) at a very slow rate due to its patented dry electrical connection. That means that the corrosion only takes place on the anode and not in the pipes nor any of the other installations.

The prevention of lime scale deposits depends upon the effect of the dissolved zinc ions on the crystallization behaviour of the hardness builders. Zinc ions, as crystallization centres, attract the large ion conglomerations. Due to the galvanic treatment, large particles have a lower attachment tendency and minimize the problem of lime deposits in pipes or installations.

Application Areas and Advantages of the Anode Technique

ION Scale-Buster® sacrificial anodes take up no room and are maintenance friendly. Minimal upkeep, longer maintenance intervals and the preservation of current value of the pipe systems are convincing arguments for a fast amortization.

14 years of success in protecting the following areas from corrosion and lime scale:

Drinking water systems:

Protection of cold and warm water circulation systems, valves and pumps. ION Scale-Buster® equipped circulation systems have fewer burst pipes and increased water volume and pressure at outlets.



ION - Model	25e	32e	40e	50e	SB 50-10e	SB 65-10e
Installation in cold water systems in residential units	bis 6	bis 12	bis 25	bis 50	n. A.	n. A.
Installation in hot water systems in residential units	bis 20	bis 40	bis 100	n. A.	n. A.	n. A.
Joint size (mm)	25	32	40	50	50	65
Joint size (inches)	1"	1 1/4"	1 1/2"	2"	2"	2 1/2"
Maximum flow through (m/h)	5,0	7,0	11,0	20,0	20,0	30,0
Net weight (kg)	3,4	4,4	5,3	9,2	15,0	16,0

ION - Model	SB 80-10e	SB 100-10e	SB 125-10e	SB 150-10e	SB 200-10e
Joint size (mm)	75	100	125	150	200
Joint size (inches)	3"	4"	5"	6"	8"
Maximum flow (m/h)	40,0	60,0	80,0	140,0	250,0
Net weight (kg)	28,0	32,0	50,0	80,0	120,0

Government safety standards approved: The TÜV-GS stamp confirms the fulfilment for drinking water regulations according to § 12 sec. 4 AVB Water V. Any plastic used in ION Scale-Buster® models is KTW (Gelsenkirchen Hygiene Institute) approved. Technical data provided are applicable to models with a maximum of 10 bar nominal pressure. ION Scale-Buster® with 40 bar nominal pressure produced serially upon request.

24 Month Guarantee

ION Scale-Buster® sacrificial zinc anodes are quality products supported by 14 years of experience. In the case of proven malfunction, the purchase price will be refunded to the customer. As additional insurance, a 5 year product guarantee is offered by the manufacturer.

Provided by:

Cooling systems:

Longer maintenance intervals for heat exchangers, as well as the reduction or even replacement of hardness stabilizers and corrosion preventers, result in significant cost savings (additives, water and energy).

Process water for manufacturing:

Protects extrusion and injection moulding machines, autoclave systems, induction coolers, circulation and vacuum pumps.