

**NEED TO REPLACE YOUR ION-EXCHANGE SOFTENER?  
HAVE PROBLEMS WITH SALT? WITH BRINE REMOVAL?  
HAVE YOU BEEN PAYING TOO MUCH FOR CHEMICALS?**

**Here is a SIMPLE and EASY TO OPERATE  
SALT-FREE, CHEMICAL-FREE,  
ISB Hardness Reduction System  
with the ScaleBuster<sup>®</sup> technology  
(based on our patent GB2386371 “Filter Softener”)**

## OVERVIEW

**Ion Enterprises** proprietary patented **ION ScaleBuster<sup>®</sup>** technology has been utilized for environmentally friendly, water conditioning by the residential, commercial, industrial and municipal markets for more than 25 years. The technology has been used by some of the world's largest commercial and industrial companies to treat scaling, corrosion, and other water challenges. Over 300,000 **ScaleBuster** conditioners have been sold and installed worldwide during the years.

## THE PROBLEM

Scale and general corrosion form on equipment surfaces and restrict water flow, clog systems and reduce system efficiency resulting in costly equipment down time and increased maintenance costs. Using chemicals to treat these conditions results in high chemical disposal costs, pollution of the environment and related health and safety issues. With new regulations limiting salt usage and disposal, most traditional ion-exchange softeners have more cons than pros. Membrane technology has high CapEx as well as OpEx, with a lot of wasted water (up to 25-30% in some cases) making it both costly and unfriendly to the environment. Many customers have found that their hardness-free water can be easily replaced by treating the hard water with a physical system reducing the hardness drastically without the costly membranes or the polluted salt.

### Scale & Fouling

*Degrades performance thus increasing energy and water usage*



### Corrosion

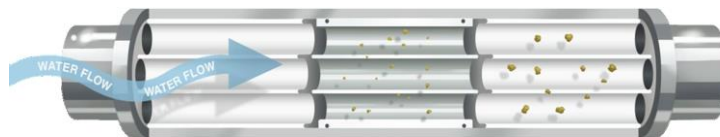
*Reduces equipment life span and increases capital spending*

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## THE SOLUTION

The basic function of the **ION ScaleBuster** as a physical water conditioner is to inhibit and prevent scale in water systems. The patented electrostatic conditioner operates without any electrical power and has no moving components. The electrostatic device uses the dielectric characteristics of the materials of its construction combined with the hydraulic conditions present during operation to force the precipitation of solid crystals in the water. This prevents scale from forming and allows precipitation of hardness ions (as Ca<sup>++</sup> and Mg<sup>++</sup>). The unique **ISB** Hardness Reduction System physically removes the precipitated hardness ions (or scale) from the water. This system is installed as a side-stream to a storage tank allowing supply of hardness-reduced water (as the old fashioned ion-exchange softeners used to, but without the needed harsh salt regeneration, eliminating the disposal of that salt either as brine or as slush after drying).



## THE CHEMISTRY

Hardness in water comes from 2 sources – **temporary hardness** (which arises from bicarbonates of Calcium and Magnesium) and **permanent hardness** (which arises from carbonates in the solution). In hard water, the permanent hardness is typically present in far greater quantities than temporary hardness. The bicarbonates forming temporary hardness are relatively soluble in water but can decompose into the relatively insoluble carbonates forming permanent hardness under the application of heat through the following reaction: **Ca(HCO<sub>3</sub>)<sub>2</sub> = CaCO<sub>3</sub> + CO<sub>2</sub> + H<sub>2</sub>O**

Since hard water is typically saturated with the magnesium and calcium carbonates forming permanent hardness, the above reaction will tend to lead to precipitation of those carbonates. It is responsible for the formation of scale deposits in water systems (particularly those systems in which the water is heated). **The ISB Hardness Reduction System removes the hardness by physical filtration** following the **conditioning** (the process which causes precipitation of the hardness ions) by the **ScaleBuster** conditioner. It also provides the means for removal of other dissolved substances (such as iron) or suspended solids or particles (such as proteins) found in water, as the precipitation and coagulation effect produced by the **ION ScaleBuster** conditioner leads to larger particles, which may be filtered out effectively. This process reduces the water conductivity, of course.

## WHY CHOOSE ISB HARDNESS REDUCTION SYSTEM?

### SYSTEM?

Most “salt-free” softeners out there do not remove the hardness ions from the water, they simply “condition” the water (by different means) but leave the minerals in the water. The unique patented design of the **ISB Hardness Reduction System** with the **ScaleBuster technology** is that while still using no salt for traditional regeneration of ion exchange resin, the precipitated hardness minerals are physically removed (separated or filtered) from the water. All ion-exchange softeners replace hardness ions (as  $\text{Ca}^{++}$  and  $\text{Mg}^{++}$ ) with sodium ( $\text{Na}^{++}$ ) ions in the regeneration process, but this unique system removes them from solution as well as providing added cathodic protection against corrosion. The system comes in different sizes for different flow rates and different hardness parameters; it will be custom designed & built to your water quality and requirement.





from



The range of applications to which **ION ScaleBuster** can be used is extensive. Experience over 25 years with the **ION ScaleBuster** technology shows that the fundamental requirements vary depending on water systems, system layout and equipment to be protected. The requirements will also vary depending on whether the product is for new construction or refurbishment of an existing system. **Ion Enterprises** has established a family of products to cover the range of installations from individual appliance protection and building usage through to large heavy industrial process applications.



### MARKETS AND CUSTOMERS

The **ISB Hardness Reduction System** with the **ScaleBuster technology** has been selected and implemented by many recognizable firms who are now receiving the benefit of this comprehensive solution. Some customer and system applications:

- Food and Beverage Processors
- Office Buildings
- Educational Institutions
- Pharmaceutical Manufacturers
- Hotels
- Health Care Facilities
- Public and Government Facilities
- Industrial processes

### CUSTOMER BENEFITS

- Reduced operation costs
- Reduction in maintenance
- Eliminated salt removal cost
- Improvement of Health & Safety
- Increased equipment life span
- Reduction of downtime
- Elimination of chemical handling and storage

ScaleBuster conditioners are certified by



*ION Enterprises Limited has been trading since 1990. The company manufactures a range of environmental water treatment devices under the trademarks of **ScaleBuster®** and **ISB®**. Over the years the technology has been installed by many well-known global companies with excellent results. The technology has been applied to more than 300,000 applications to date.*

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**SCALEBUSTER** technology