

NO WATER TOO HARD, NO PIPE TOO BIG!

What makes a REAL,
totally **GREEN** Solution?

Well, for Hard Water Treatment it...

- Does not waste any water
- Requires no maintenance
- Provides an uninterrupted water flow
- Eliminates existing scale buildup
- Reduces downtime, increasing revenues
- Protects systems and infrastructure from Hard Water scale without the use of chemical dosing or salt
- Is sizeable to provide treatment for any flow requirement
- Requires no extra space or footprint
- Maintains or improves equipment and energy efficiency
- Has a proven track record of success
- And has a money back Satisfaction Guarantee



INDUSTRIAL

***HydroCor ~ Because Water Matters ~
for Business, for Living, for our Environment, for YOU.***

History and How it Works – Over 40 years in over 40 countries

FROM THE UNITED KINGDOM

Fluid Dynamics International in England is one of the most experienced water conditioning and hard water scale prevention product manufacturers. Established in 1973, they remain the only water treatment company whose products have been tested and proved effective by the US Government's Green Proving Ground.

The company has served over 200,000 clients worldwide ranging from Coca Cola to Unilever to the US Airforce, and Cambridge University. Markets served include Europe, Asia, South America, Africa, the USA and Canada and Australia - Fluid Dynamics has distributors in more than 40 countries.

The company specializes in totally non-chemical solutions to solve the problem of hard water scaling.

IN THE USA

Although the Fluid Dynamics products have been sold and used in the United States for close to ten years as of this writing, the line and product names did not efficiently resonate with the US Market. In March of 2018, the name NaturalSof was adopted for the US Market for the US Company Name and the Product Line.

The re-launch enjoyed great success and NaturalSof is stocked in wholesaler and plumbing supply houses across the country (you likely received this brochure from one of them). Thousands of units are in the field installed in homes and businesses. From ¼" point of use (POU) applications like Water Coolers and Coffee Machines to high flow pipes in Cooling Towers to High Rises in LA, Hotels and Universities, Hospitals, Wildlife Preserves, Ice Rinks, and even Cattle Ranches. Wherever hard water causes problems, NaturalSof can and is helping as people become aware of our capabilities. There is no restriction on maximum line size, no pipe too big!

To be clear, NaturalSof does not "soften" water and the terminology like "no-salt softening" has been errantly used by some in the marketplace to describe what is really treating or conditioning minerals within hard water. As you read through this material you will find that we leave water in a more Natural state without Softening...so just leave off the "t" and you get NaturalSof!

If you can point to an area in your operation that is suffering from calcium lime scaling, we are confident that we can help with a solution that puts **money** back in your budget and **time** back into your schedule. We will even help you calculate the benefits up front and guarantee you will be satisfied...or you get your money back!

Some MagCat History and Details

The MagCAT was developed to provide a unique combination of proven technologies, catalytic and magnetic, for specific applications. It gives a “double-boost” to the effectiveness of the catalytic process.

The conditions for this unit exist in particularly hard water with high TDS (Total Dissolved Solids), water with high pH, or water under extreme pressures or temperatures. Water that contains high proteins, such as lactose and fats found in milk processing systems, or water that is contaminated with oil or silica, or contains organic compounds like paraffin and waxes as found in the oil & gas industry, are also common conditions for the MagCAT. Recycled water is another suitable application. The higher the SR (Saturation Ratio) values of the water, the more effective the treatment of the unit. After trying dozens of configurations of powerful rare-earth magnets, Fluid Dynamics came up with the correct alignment of the magnets, in conjunction with offsetting them from the catalytic core to co-exist in one PWT (Physical Water Treatment) module, thus providing the most effective treatment possible in these conditions.

The magnets help with the “diamagnetic substances”, by changing the velocity of the electrons passing through the magnetic field. The electrical field created triggers a crystallization process for just a short distance, but this is enough to prevent scaling or fouling of the catalytic core, which is within inches of the magnets. This pre-precipitation of the calcium carbonate inside the chamber, converting it to harmless crystal, is then boosted by the turbulence and swirling motion around the catalytic core, which further ensures the calcium is in aragonite form and prevents scaling of the system. Together, the magnets and catalytic core enhance the effectiveness of the catalytic process.

Magnetic treatment alone is not sufficient to provide anywhere near the same outcome.

In some applications like oil & gas, much higher pressures are encountered, and the water comes into contact with many more organic compounds like paraffin, iron, carbon, silica, waxes, and asphaltene. Silica or silicon scale is particularly troublesome, because it is glass-like, with a shiny, bubbly, glossy appearance. This is a very hard and brittle scale, which usually requires very strong chemicals to remove. This silica scale bonds very quickly with calcium carbonate. In the process of injecting pure water (very soluble) or steam into oil wells deep into the ground, the strontium, bromine, and cobalt all bond with the calcium as well, and can foul the catalytic core of a standard Colloid-A-Tron, which minimizes its ability to convert the calcium carbonate to calcium aragonite.

Thus, the Mag-Cat was developed for such applications, to give a “double-boost” to the effectiveness of the catalytic core.

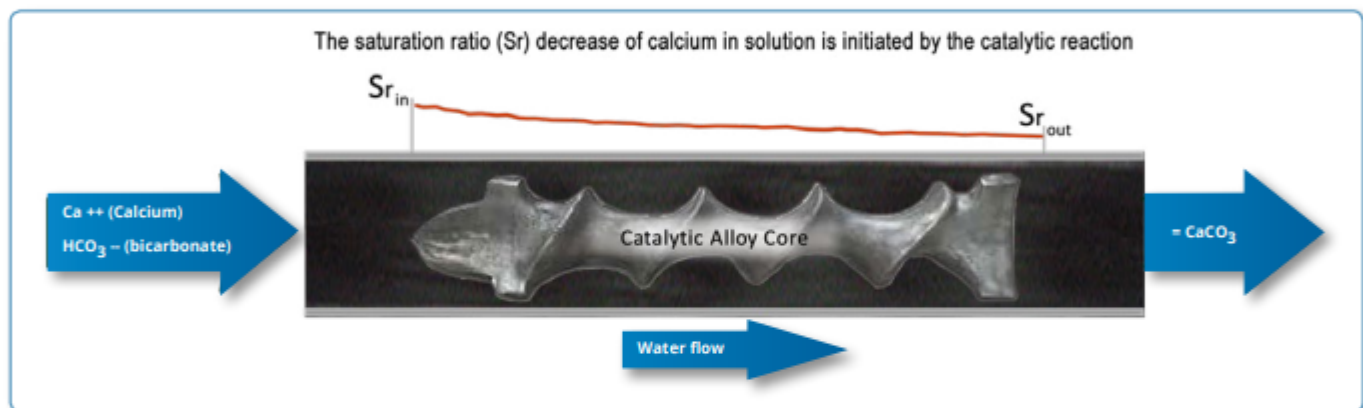
WATER CONDITIONING AND HOW IT WORKS

We think of water as a clear liquid but water really contains suspended solids as well as dissolved minerals and gases. These components are picked up as water passes through nature on the way to our homes. Water hardness is measured by the amount of dissolved calcium and magnesium in water.

Note: While magnesium contributes to the hardness level it's calcium that causes hard scale, so that's what we address here.

How does hard water cause us problems?

Water will only dissolve a certain amount of calcium dependent upon conditions. The amount of dissolved calcium that can be held in water reduces as temperature or pH increases. Using temperature as an example, let's take a hard water and heat it to a temperature (x) where the water is at its absolute maximum capacity for dissolved calcium. This is known as the saturation point. Now we'll continue to apply heat taking the temperature above (x). As we exceed the saturation point an amount of dissolved calcium is forced out of solution (it precipitates meaning it is no longer dissolved).



When calcium precipitates in this way it can combine with bicarbonate to form a hard calcium carbonate scale called **calcite** that bonds to the nearest receptive surface.

To prevent this from taking place our treatment reduces the amount of dissolved calcium by precipitating calcium carbonate in a form called **aragonite**, harmless insoluble crystals that are carried through the system to the drain or consumed.

Our treatment uses a catalytic reaction to induce the precipitation of aragonite (details below):



Calcite, a form of calcium carbonate, is what we call limescale or scale. When calcium carbonate precipitates as calcite it forms a hard deposit that causes numerous problems adhering to any receptive surface requiring acid or a significant mechanical effort to remove.



Aragonite, another form of calcium carbonate, has very different characteristics to calcite. When calcium carbonate precipitates as aragonite it forms a non-adhering harmless insoluble crystal that is either consumed or carried through the system to the drain.

- The NaturalSof scale prevention product line utilizes a non-sacrificial lead free alloy core with a special surface. As water passes over the core a catalytic reaction takes place.
- The reaction causes carbonic acid to precipitate. The reduction of this acidic component increases the pH of the solution.
- This pH increase triggers calcium and bicarbonate to come out of solution combining to form calcium carbonate (CaCO₃) in its aragonite state. The pH increase is only temporary so there's no difference in pH readings before and after the unit.
- Catalytic treated water has a greater capacity for calcium. This greater capacity prevents scale deposition and in many cases any pre-existing scale is gradually absorbed.

Summary of when to use the NaturalSof MagCat

MagCat is designed to be used in areas that have the following conditions:

- Water with extremely high TDS levels
- Water with low conductivity
- Applications where there is a wide fluctuation in flow rates
 - Systems using variable speed pumps that have the ability to provide a flow from zero and up dependent on the required demand
- Water that may contain oily or coating types of contaminants that would tend to interfere with water contacting the catalytic core alone
- Where Specifications are written for “magnetic treatment”

The versatility MagCat offers has numerous applications. Here are some examples:

- Wastewater systems with scale deposition
- Pumping stations
- Cooling towers
- Sea water cooling systems
- Desalination systems/Evaporation systems
- Vacuum pumps
- Water systems contaminated with oil

Installation Examples – Point of Use or Point of Entry

Some examples of how and where to apply NaturalSof Catalytic Units in systems that are known to be negatively impacted by Hard Water Scaling. This is not an exhaustive list. It will provide you with some ideas about how and where NaturalSof can help in your operations.

Evaporative Condensers

Compressors

Cooling Towers

Low Pressure Steam Boilers

Hot Water with No Recirculation

Hot Water with Recirculation

Reverse Osmosis

Calculating Return on Investment vs Net Present Value

– Customized for your project

We know that water treatment is optional. It is possible in hard water areas to leave the issue unaddressed and just "deal" with it in other ways. These other ways typically consist of:

- Preventive Maintenance
- On-going Repairs / Replacement of key Plumbing Components, Heaters, etc.
- Manual Cleaning of Faucets, Fixtures, Sprayers, Hardscaping, etc.

If you ARE using another means of treatment prior to investing in NaturalSof you have other ongoing expenses such as:

- Chemical Costs
- Salt Product and Delivery
- Annual or More Frequent Maintenance of **Treatment Equipment**
- Electricity
- Excess Water Usage from Backwashing

It has to make sense (and Dollars!) to invest in initial treatment or alternative water treatment.

We want to help you with this and have created a simple to use Microsoft Excel file that will calculate the Return on Investment (ROI) and Net Present Value (NPV) for your application/project.

This way you can know up front if it is a good business decision to invest in NaturalSof or any other treatment for that matter.

INSTRUCTIONS FOR USE

1. Download the file from our Virtual Toolbox [HERE](https://drive.google.com/open?id=1wi_ENNyFvLrSMV4a4ZDFju3o5XXv-q8h)
https://drive.google.com/open?id=1wi_ENNyFvLrSMV4a4ZDFju3o5XXv-q8h

(or send an email to info@naturalsof.com and request the file to be sent to you)

2. Edit the yellow highlighted cells with your real information:

- Current cost of hard water in your application
- What % you expect to realize in savings based on the time of implementation in the Year 1
- Cost of Investment in NaturalSof
- Cost of Capital - click on the link in the file if you do not know your current rate

3. Check out the Results!

The file goes out 10 years because the average life expectancy of a NaturalSof unit is 10-15 years based on the last 40+ years of international applications in over 40 countries!

Money Back Guarantee – 97% Satisfaction rate across the USA

We know that there are legitimate areas where we will not be able to help, but with our one year money back guarantee on the product cost, the risk is minimal (especially if you have filled out an ROI file and see the potential benefits). You will likely know within 30-90 days of application if we are living up to your expectations. We have even seen amazing scale reversal in systems in a matter of weeks!

NaturalSof PRO's Satisfaction Guarantee

NaturalSof PRO comes with Our:



A Full One Year Money Back Guarantee
excluding shipping, installation and removal costs.

We believe in our product and you will too.

This guarantee is valid from the date of purchase, please retain your receipt for validation purposes.



GSA Green Proving Ground Summary

– The only Government tested and recommended non-chemical water treatment
Infographic Summary below. The full study can be found here: <https://naturalsof.com/prosite/>



OPPORTUNITY

What percentage of the U.S. has hard water?

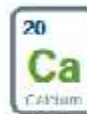
85%
OF THE UNITED STATES HAS HARD (>121 MG/L) WATER!

CALCITE BUILDUP

due to hard water restricts water flow and causes heating systems to overheat and fail

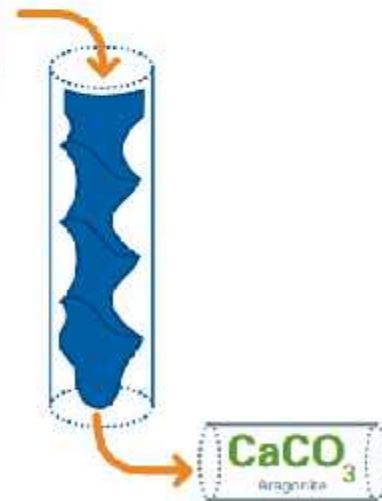
TECHNOLOGY

How does the Catalyst-Based NCWT work?



PIPE WITH HELICAL INSERT PREVENTS CALCITE BUILDUP

BY TRANSFORMING CALCIUM AND CARBON TO FLUSHABLE ARAGONITE CRYSTALS



M&V

Where did Measurement and Verification occur?

OAK RIDGE NATIONAL LABORATORY assessed the effectiveness of the catalyst-based NCWT at the Moss Federal Courthouse in Salt Lake City, Utah. Before installation of NCWT, commercial grade heating elements overheated and failed after only two months of operation.

RESULTS

How did Catalyst-Based NCWT perform in M&V?

EFFECTIVE
REDUCTION OF
CALCITE
 NO BUILDUP AFTER 18 MONTHS²

O&M
MINIMAL
 NO MOVING PARTS OR CHEMICALS³

<2 yrs
 PAYBACK;
 IMMEDIATE WHEN COMPARED TO CHEMICAL SYSTEMS⁴

NCWT vs. Salt-Based System in Salt Lake City

Payback for NCWT is immediate compared to a salt-based system

	Salt-Based System	NCWT
Equipment Cost	\$2,600	\$1,192— $\frac{1}{2}$ " diameter pipe Unit pricing ranges between \$798 for a $\frac{1}{4}$ " pipe and \$96,350 for a 16" pipe.
Installation Cost	\$500	\$500—10 hours @ \$50/hr Installation for new construction is \$0, as it incurs no additional costs over baseline.
Maintenance Costs/year	\$1,850—\$350 chemicals, \$1,500 labor	\$100—biannual tank cleaning Required in systems without a drain.
Simple Payback		Immediate

DEPLOYMENT

Where does M&V recommend deploying Catalyst-Based NCWT?

FACILITIES WITH HARD WATER

Any heating system with calcification issues including hydronic heating systems and boilers, condensing boilers, and gas and electric water heaters. The harder the water, the more likely NCWT will be cost-effective.

¹American Water Works Association, Public Notice Article, May 2007. ²Catalyst-Based Non-Chemical Water Treatment System, Frank E. Moss U.S. Courthouse, Salt Lake City, Utah, Dan Howett, (CRNL) October 2014, p.1. ³Ibid, p.24. ⁴Ibid, p.25.

Case Summaries – Applications from around the world and across the USA

Check our website for a summary of successful solutions to stubborn expensive problems.

Note: Some of these cases are completed under the Fluid Dynamics brand in the USA. The Product Specifications are identical and please remember that NaturalSof was re-branded here in 2018. Wherever you see terms or product names that refer to the International naming of Fluid Dynamics (like Scaletron or Colloid-A-Tron) just think "NaturalSof" – we are making it easier to remember, thanks!

got scale?

