

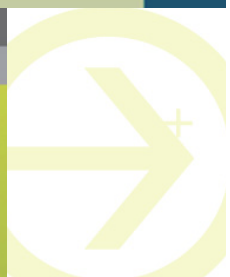
Efficiency and energy savings systems.

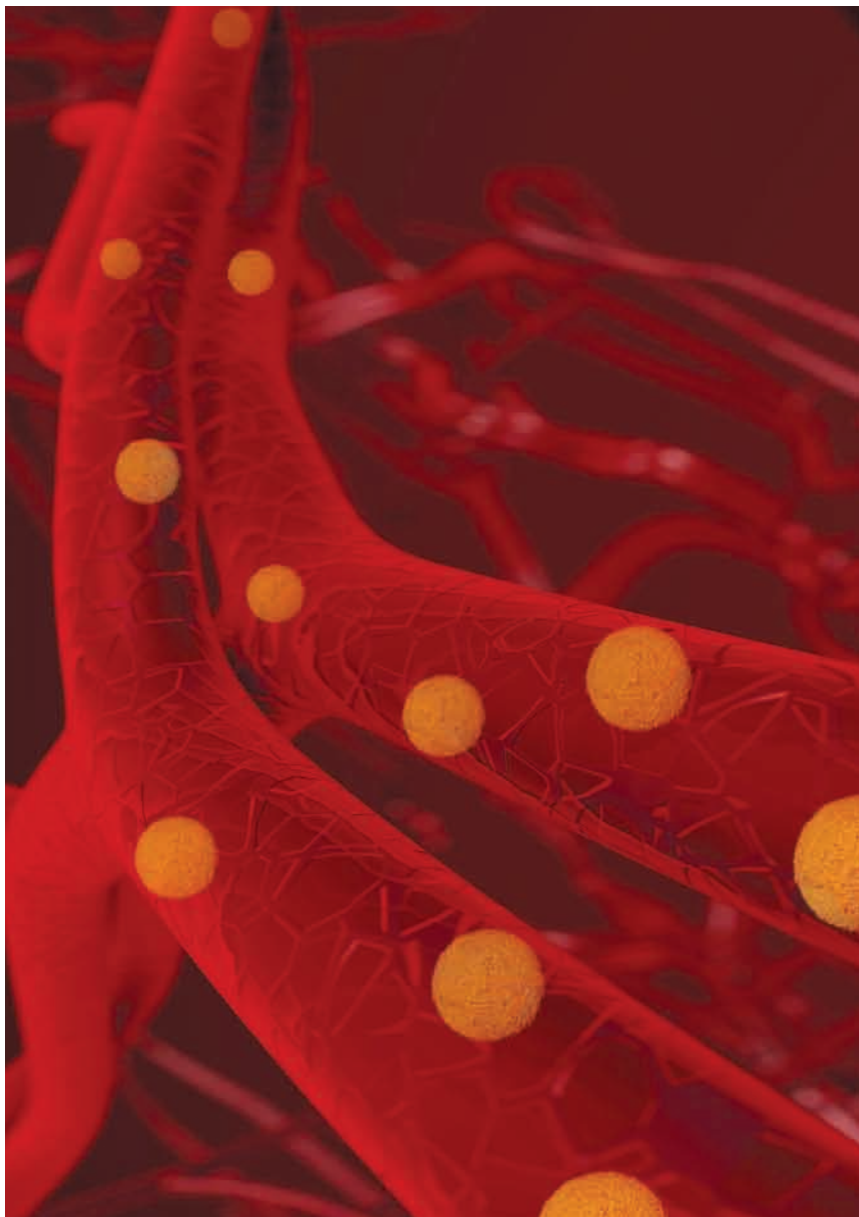
Water cleaning, descalcification and disinfection systems in cooling towers.

Cleaning, descalcification and disinfection systems for closed cycles.

Automatic and continuous cleaning systems for tube and shell heat exchangers.

Chlorination systems of drinking water, through electrolytic technology.





SAMI world wide technology Spanish brand was founded at ACS's group in 2003. SAMI technology products was founded in 1996, to develop and sell cost-effective fouling mitigation and cleaning products. Drawing on more than 30 years of experience, SAMI develops environmentally-friendly solutions that keep heat exchanger and cooling towers clean and continuously efficient. Our products deliver increased productivity and energy efficiency to facilities, industrial processes and power plants.

SAMI's patented products have already proven their value in thousands of installations around the world.

All products and services provided by SAMI are fully compliant with CE Directives, ISO 9001:2000 and Green Label Certification standards.

SAMI is a member of the NAESCO the US National Association for Energy Service Companies (ESCO) and registered ESCO.

SAMI's energy and water saving solutions are installed in thousands of sites around the world, providing automatic cleaning of heat exchanger and condenser tubes, automatic water treatment for cooling towers and closed circuits, and chemical-free chlorination and purification for drinking water.

SAMI customers in Spain:

- Districlima
- ✓ Expo Zaragoza
- ✓ Forum Barcelona
- ✓ Otras instalaciones
- Banco BBVA
- ✓ Edificio Presidencia en Bilbao
- ✓ Edificio CPD (La Vaguada - Madrid)
- ✓ Edificio CPD (Avda. de los Poblados s/n - Madrid)
- ✓ Hotel - Residencia (Puerto de Mazarrón)
- ✓ Otras instalaciones...
- IFEMA Madrid
- Hospital de la Paz
- Endesa España (Centrales de Producción de Energía)
- Otros clientes...
- Much more facilities, of prestigious customers around the world, guarantee our technology.

You, like thousands of satisfied SAMI clients around the world, can also reduce your electricity and water consumption costs while maintaining and improving the productivity of your water-cooled equipment and water circuits.



FACILITIES

Achieve up to 25% savings in electricity and maintenance costs while delivering optimal cooling from air conditioning systems.

INDUSTRY

Increase productivity and reduce maintenance and operating costs by keeping heat exchangers clean.

POWER PLANTS

Automatic tube cleaning delivers about 4% increase in power plant productivity and lower maintenance expenses.

Energy Efficiency in Buildings and Commercial Malls

SAMI provides innovative solutions for boosting energy efficiency in central air conditioning systems and cooling towers. Our customers enjoy significant savings resulting from lower energy consumption and simpler maintenance. All our products are environmentally friendly and require no use of chemicals.

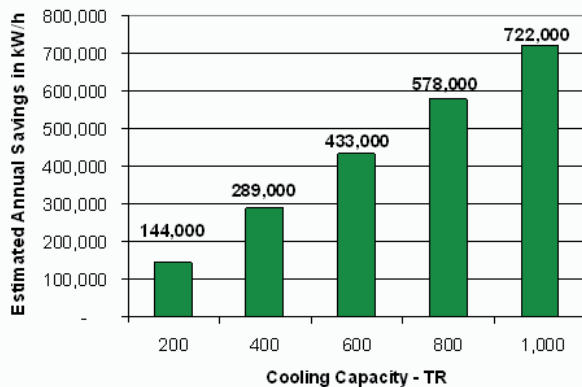
Productivity and Savings in the Operation of Heat Exchangers

Heat exchangers used in the process industries and refrigeration plants, spend a significant proportion of the total energy consumed in the production process, reaching 70% in some cases. Interference in heat transfer caused by fouling of heat exchangers is the main reason for increased energy consumption, maintenance and operating expenses.

On-Line Optimization of Cooling Circuit

SAMI's solutions deliver constant optimization of energy and water consumption of HVAC cooling circuits, by means of its patented, ecological and low maintenance technologies. SAMI's solutions provide the required operating conditions, to achieve maximum cooling efficiency in water-cooled HVAC systems and cooling towers. Thousands of SAMI installations worldwide deliver significant savings in energy and water consumption and help keep water free of harmful chemicals.

Installation in A/C Systems: ATCS can deliver annual savings from 140,000 to 720,000 kW/h*



* Depending on the characteristics of the A/C system and the operating conditions

Automatic On-line Cleaning of Heat Exchangers

The most effective solution to optimize the operation of heat exchangers and achieve a prolonged economic life is to keep them clean of fouling.

SAMI provides automated solutions that operate on-line for constant cleaning of heat exchangers, ensuring their efficient operation and keeping them clean of deposits and incrustations at all times, without unwanted stoppages in their operation and without the need of chemicals.

Benefits

- Up to 25% savings in electricity consumption.
- Up to 30% savings in water consumption.
- Simple, low frequency maintenance.
- Avoids the use and disposal of harmful chemicals.
- Helps protect HVAC equipment and extend its useful life.
- Fast return on investment.



ATCS. AUTOMATIC TUBE CLEANING SYSTEM.

Maximum Efficiency and Higher Productivity for Condensers and Heat Exchangers

SAMI ATCS (Automatic Tube Cleaning System) is the most efficient automatic on-line solution for keeping shell and tube heat exchangers continuously clean and working at full capacity. SAMI ATCS has delivered extraordinary results in thousands of installations worldwide.

Automatic cleaning increases energy efficiency and productivity in facilities, industry, and power plants.

Heat exchanger's tubes get clogged with:

- Macrofouling: mussels, fish, algae, debris, leaves, grass, stones or internal construction parts of cooling towers.
- Microfouling: mud, sand, clay, microorganisms, bioslimes, corrosion products and inhibitors.
- Scaling.

Fouling accumulates over time, and significantly degrades the performance of the heat exchanger:

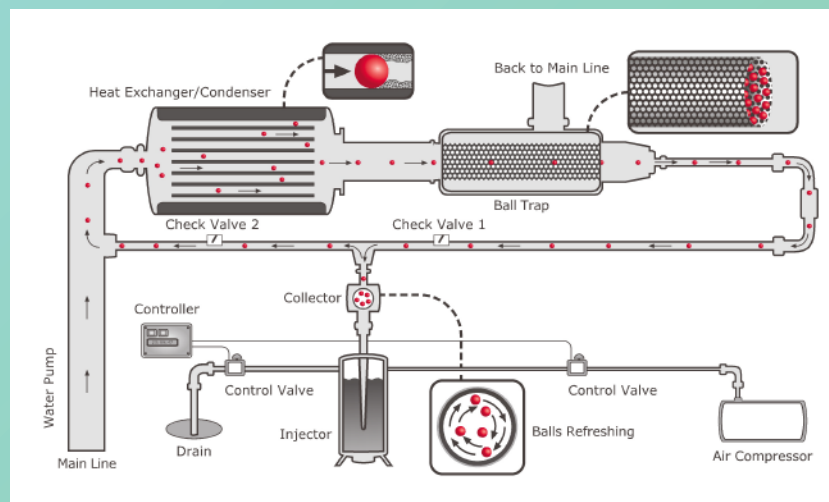
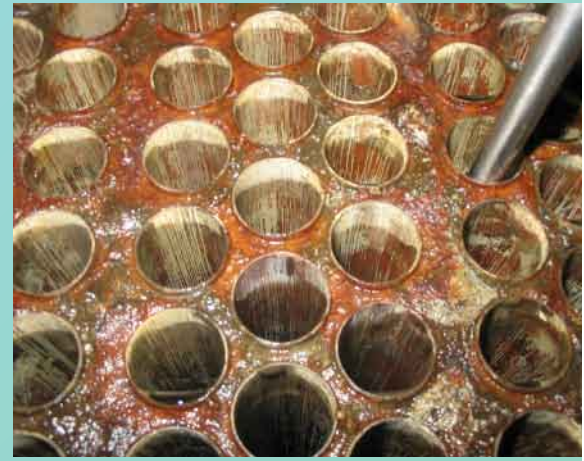
- Decreased productivity due to cleaning shutdown and performance degradation between treatments.
- Higher energy consumption to compensate for inefficiency.
- Higher maintenance costs due to manual off-line cleaning and shutdown.

How ATCS Works

The SAMI ATCS is installed on heat exchangers and keeps tubes clean without human intervention. The system periodically injects into the tubes sponge balls that are slightly larger in diameter than the tubes themselves. The natural pressure head pushes the balls through the tube, which is thus rubbed clean. The balls are then trapped in the outlet of the heat exchanger, where they are prepared for the next cleaning cycle.

Typical industrial installations, take less than 20 man hours, and requires only 8 hours of process shutdown.

Trapping units are available in a variety of shapes and flow configurations to accommodate piping routes design and available space for installation.



SAMI ATCS' MAIN ADVANTAGES:

- Excellent cleaning: reaches all tubes, both central and peripheral.
- Simple design: delivering high reliability, rapid installation, and effortless maintenance.
- Wide range of sizes: suitable for a wide variety of heat exchangers.
- Better ball trapping mechanism: absolutely no balls lost.
- Accurate control of the cleaning process: customizable cleaning intervals provide high performance and minimize balls' wear.

SAMI ATCS BENEFITS:

- Tubes are kept clean at all times.
- Heat exchanger constantly works at maximum efficiency.
- No downtime for periodic maintenance
- No chemicals and residues disposal hassle.
- Simple maintenance through continuous, automatic cleaning.
- Extends system service period
- Innovative design delivers high reliability and simple integration.

SRS. SCALE REMOVING SYSTEM.

Eliminate Scale with SAMI SRS

SAMI SRS – Water Treatment System is chemical-free environmentally-friendly solution for removing scale and keeping water circuits clean. In thousands of installations throughout the world, SAMI SRS prevents scale and sludge buildup in cooling towers, open and closed circuits, eliminating the need for chemical water treatment and manual cleaning.

Water circuits and cooling towers suffer from fouling caused by scale, corrosion, dust and bacterial activity. The sediments stick to all sections of the water system, clogging it and drastically decreasing its energy efficiency. Chemical treatment of the water provides only a partial solution and requires expensive disposal of the chemicals used.

SRS Solutions

SAMI provides SRS-based solutions for treating water in three types of circuits:

- SR-CT: for make-up water in cooling tower
- SR-CC: for closed water circuits in central air conditioning and industrial air-cooled indirect cooling processes.
- SR-CL: for Water Purification—cleans, treats and purifies water.

How it Works

SAMI SRS uses an innovative electrolytic process. A large cathode area creates a high PH environment that encourages scale formation inside the device. A hydro cyclone structure ensures that all the water will be treated.

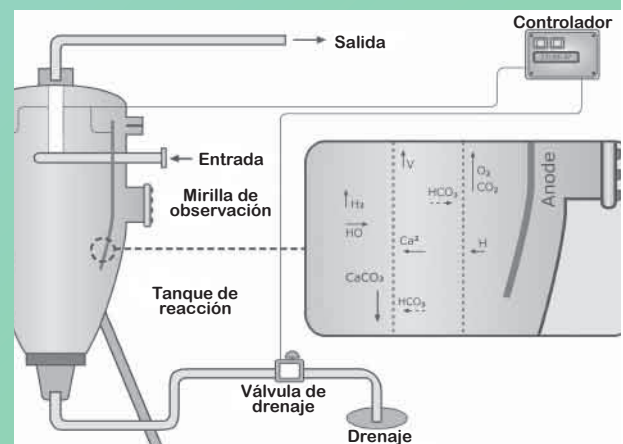
Moreover, the electrolytic process removes existing scales. The electrolysis disturbs the chemical balance of the water, which makes it attack existing scale as a means to restore equilibrium.

An additional benefit is the creation of chlorine in small quantities, which eliminates algae and bacteria that may develop in the water.

SAMI SRS Water Treatment Systems Ongoing Benefits:

- Prevents scale build-up
- Creates water equilibrium that prevents corrosive processes
- Oxidizes and removes corrosive elements
- Eliminates the need for corrosion inhibitors by working at a high alkaline pH level
- Removes suspended solids automatically and continually
- Purifies water preventing biological growths
- Destroys microbiological life and prevents development of biofilms
- Provides automatic hassle-free operation
- Offers real savings in on-going maintenance

If you are looking for an effective water treatment solution for your cooling tower or chilled water circuit, SRS is the only solution that provides outstanding performance and a fast return on investment.



SR-CT. The Solution for Cooling Towers

The SAMI SR application for cooling towers cleans the scale in the water before it reaches the tower by treating the make-up water. If this isn't done, the mess becomes clogged with scale and substantially reduces the cooling performance of the tower. The SR keeps the make-up water free of harmful scale build-up and eliminates the need for frequent filling replacement, which is necessary when the scale build-up clogs the filling.

Cooling tower basins and downstream equipment can also be affected by harmful scale build-up as well as sludge and other bacteria and algae. This results in a decrease in the tower output, increased costs, damage to the cooling tower and its condenser systems and worse – increase energy consumption. In addition, the man hours and chemical additives to maintain the tower are costly and time-consuming.

SAMI's SR-CT harnesses leading-edge technology to provide an unique, cost effective and environmentally friendly solution for cleaning, disinfecting and preventing scale build-up in cooling tower water systems. Unlike other costly systems that use chemical processes, SR-CT keeps costs down with low initial investment and maintenance fees, and a streamlined chemical-free process.

The SR-CT uses the electrolytic scale removing process to provide ongoing maintenance then keeps the cooling tower clean by keeping the water free of harmful fouling.

TSR-CC. The superior system for closed cycles

Water, in cold water circulation systems, comes into continuous contact with iron and various other metals. This results in oxidation which causes corrosion. Since the water is not replaced over long periods, the concentration of dissolved iron in the water builds up beyond saturation point and begins to sink as harmful sludge that clogs pipes and hampers the heat exchange process.

In addition, the corrosion sediments create a bed for bacteria that feed off of the corrosion. These bacteria, found under the sediments, feed off the iron dissolved by the acids that the bacteria produces.

The most common solution, adding chemicals, doesn't adequately solve the problema and causes damage to pipes, accesories and auxiliary equipment.

The SR-CC Leading-Edge Solution

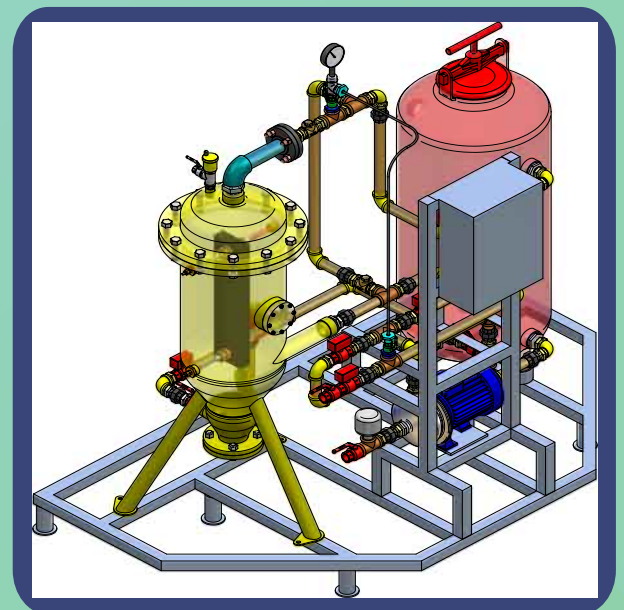
SAMI's SR-CC uses integrated multi-task electrolytic technology to combat four common problems inherent in water systems:

- Scale Build-up
- Corrosion
- Biogrowth
- Suspended solids

This results in loss of output in the closed cycle water system that occurs in four areas, as follows:

- Cooler/Evaporator
- Fan-coil and folters
- The main pipeline system and its control equipment
- Closed condensing systems

This robust system simultaneously cleans, sisinfects and removes scale and prevents it, combating the harmful effects that cause loss of output. Other purification technologies require a number of separate activities and costly chemicals, which lower water quality And raise costs. SAMI multi-purpose solution performs one sophisticated integrated process that is clean, inexpensive and environmentally friendly.



In this process two types of disinfections occur on the surface of the anode in the electrolytic chamber:

- An anode oxidation reaction
- An acidic catalytic reaction

The anode oxidation reaction is a series of reactions that produce gases and free radicals with high oxidation properties, which disinfect the water.

Installing this technology means low initial investment, low maintenance and low-cost spare parts. It enables ongoing flow of clean quality water, using relatively little water resource and all in an environmentally friendly manner.

SR-CC Benefits

- Creates water equilibrium that prevents corrosive processes
- Purifies water preventing biological growths that cause corrosion
- Prevents scale build-up
- Destroys microbiological life and prevents development of biofilms
- Eliminates the need for corrosion inhibitors by working at a high alkaline pH level
- Removes suspended solids automatically and continually
- Provides automatic hassle-free operation
- Offers real savings in on-going maintenance

SR-CL. Water Purification

Today there is a global effort to keep the environment free of pollution. Therefore, maintaining and providing clean, purified and disinfected water is a top priority. There are several methods available for this process. There are costly processes which add chemicals to the water, and require transporting and handling the chemicals on a regular basis. This is both expensive and dangerous.

The cost-effective natural method currently available is both resourceful and safe. It uses electrolysis to bring out the natural elements inherent in water and produce active chlorine. This enables water purification without the need for harmful chemical additives. SAMI developed this solution to make water purification a natural and relatively simple process.

How does it Work?

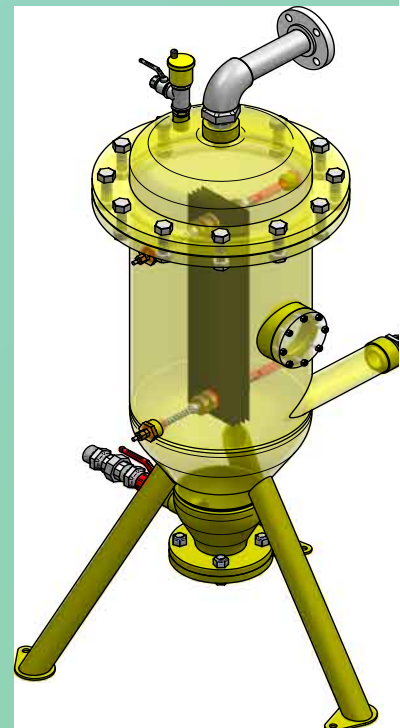
In the electrolytic process, direct electric current (DC) is transferred through the electrolytic medium (water) and the electric voltage of a DC power supplier works between the two electrodes, the anode and cathode.

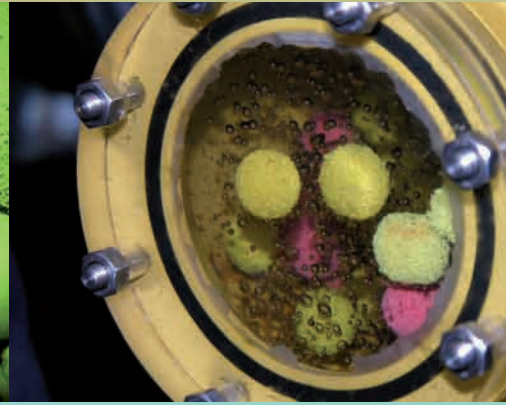
Chemical reactions take place on the electrode surfaces: In and around the cathode environment, reduction and sedimentary processes occur on a basic pH-level. In and around the anode environment oxidation processes occur on an acidic pH-level. The active chlorine is produced in close proximity to the anode in its acid hypochlorite form, or alternately, ion hypochlorite, depending on the level of the water reaction.

Water purification benefits

SAMI's water purification process provides a wide-range of benefits over other methods that are available today:

- Produces Chlorine from chloride present in water
- Produces additional disinfecting substances, such as ozone and peroxide
- Keeps chlorine levels in water stable
- Decreases in costs as the concentration of chlorides increases
- Has no chemical additives
- Produces disinfecting substances instantly
- Doesn't require transporting of hazardous substances
- Has no environmental restrictions – completely natural process
- Is environmentally safe and friendly





Due to continued increase in energy costs in recent years, SAMI has developed a number of exclusive systems, capable of effectively managing teams of cold / heat in industrial facilities, being environment-friendly.

It's time to save energy in your cooling and heat systems, to reduce energy and maintenance costs.

SAMI technology around the world:

Asia Pacific Rim
Chile
China
Hong Kong & Macan

India
Japan
Mexico
Philippines

Singapore
S. Korea
Taiwan
Spain

Turkey
USA



maximum flow for maximum efficiency

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