



## AquaFEW (Functional Electrolyzed Water) & AquaFew (Ionized Surface Tension Technology) Systems

Water hydrogens has a memory and always strives to merge back together, because alkaline water is the “alpha” and searches to reunite with the acidic water. We have designed our equipment around the science of water electrolysis. AquaFEW stepped back and spent over 4 years of research trials and errors with one goal in mind...to stabilize the acidic water and natural active ingredient sanitizing properties of free chlorine. AquaFEW was successful in accomplishing what we set out to do.

AquaFEW processing systems through innovative new technology have been able achieve separation of alkaline and acidic water..



### AquaFEW ISTT Technology - Brief Overview

- Separation of two hydrogens in water creates 2 product waters...AK FEW (Alkaline-High pH) and FEW (Acidic -Low pH).
- Both are **stable** and **create reduced surface tension**.
- During electrolysis, molecular restructuring to nanobubble size occurs.

### AquaFEW AcFEW - Acidic (Low pH) water:

- pH range is 3.5 – 5.5.
- HOCl – Natural active ingredient hypochlorous acid (sanitizer). HOCl
- ORP – Oxygen Redox Potential 900-1100+mV.

#### **Benefits:**

- Smaller, atomizer or mist, low volume, high pressure applicators versus large conventional high-volume applicators.
- Deeper Sanitizer, AquaFew ISTT due to reduced surface tension.

### AquaFEW AkFEW - Alkaline (high pH) water:

- pH range is 9 to 11.5.
- NaOH - Natural Active ingredient Sodium Hydroxide (degreaser/detergent). NaOH

### **Benefits:**

- Significantly reduced surface tension.
- 98% surface coverage is achieved compared with traditional sanitizing methods requiring 5-75 gallons per minute, therefore reducing sanitizing water needs to  $\frac{1}{2}$  -  $\frac{3}{4}$  gallon per minute.
- Stronger degreaser/detergent.

AquaFEW equipment has been developed for commercial use in the agricultural as well as other industrial applications. We work with equipment manufacturers, implementing our patented process technology within their existing equipment to meet the demand for commercial applications for food safety in processing facilities.

AquaFew ISTT “FEW” water systems were developed for our customers who are using AquaFEW water systems in food processing facilities. They wanted a system that could meet their needs for water flumes and chill baths that similarly duplicates our AquaFEW process and to lower and/or eliminate equipment corrosion. After almost 4 years of focused, results driven, research and development, we achieved our **neutral pH water** producing AquaFew ISTT FEW. It is a standalone or integrable system with a highly diverse, desirable number of applications and an almost beyond comprehensible number of endless uses.

### **One Example -**

A current problem:

Current Sodium Hypochlorite (Chlorine bleach) food sanitizing methods dehydrate causing quicker, increased product decay. Traditionally, when consumers open bags, air draws residual moisture out of product and when moisture meets decay, products go bad even as quickly as overnight.

Our solution:

Through our process of electrolysis, significant reduced surface tension is created therefore we are able to maintain or increase hydration levels in finished RTE (ready to eat) produce products which extends fresh life for sale by date as well as for consumers after opening bags due to our *stable* product water. Another benefit of our product water is the surface tension reduction, lower chemical use concentrations needed to achieve the same results can be accomplished, as well as due to its neutral pH, it can be combined with many chemicals, even chlorine (alkaline) and citric acid (acidic).

### **AquaFew ISTT (Ionized Surface Tension Technology) Brief Overview**

- Neutral, Stable FEW water processing.
- Installed at point of entry (source water) is restructured to nanobubble size, so bonds are broken, and all minerals remain in suspension.
  - Elimination or reduction of white “hard water” accumulation.
  - Active ingredient HOCL (hypochlorous acid) sanitizer and Sodium Hydroxide degreaser/detergent combined into one product.

Overall Potential of AquaFEW ISTT system sanitation applications include:

- Office buildings.
- Commercial applications.
- Food, meat, poultry, seafood processing facilities.
- Restaurants, convention centers, fitness facilities, schools, hospitals, etc.
- Jails, State and Federal prisons.
- Wastewater Treatment.
- Cooling tower and boiler application and maintenance. 24-hour treatment. (See cooling tower document).
- Agriculture, specialty agriculture, sports turf, cannabis.
- Reverse Osmosis permeate water reuse and membrane life maintenance.
- Beverage Industry, “Drinking Water, energy drinks, etc.”
- Craft Brewery, distillery, wine industry.

**AquaFew ISTT EW water**

## How Functional Water is Produced

The Process of Structuring Functional Electrolytic Water

Cluster of Water Molecules

Electrolysis Chamber

Electrolytes Found In Water Molecules

Molecular Structure Of Water

The Electrolysis Process

Separation Of Ions After Electrolysis

Positive and Negative Ions

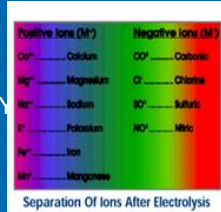
Positive and Negative Electrical Charge

Resultant Ion Separation

# Instilled Properties After Electrolytic Ion Separation

## ALKALINE ION CONCENTRATION

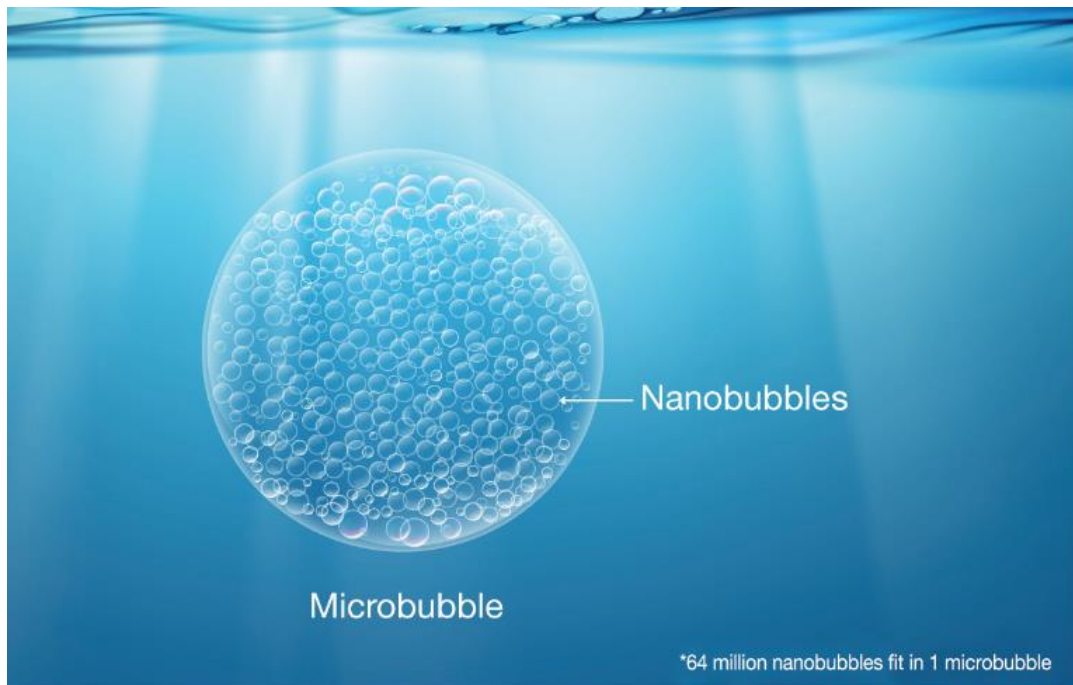
- 5 ~ 6 WATER MOLECULES
- REDUCED OXIDATION
- INCREASED HYDROGEN
- IMPROVED PERMEABILITY
- IMPROVED SOLUBILITY
- EFFECTIVE CATALYST
- ELECTRON DONATING
- HIGHLY ENERGIZED



## ACIDIC ION CONCENTRATION:

- 6 ~ 7 WATER MOLECULES
- INCREASED OXIDATION
- REDUCED HYDROGEN
- IMPROVED PERMEABILITY
- IMPROVED SOLUBILITY
- EFFECTIVE CATALYST
- ELECTRON SCAVENGING
- HIGHLY ENERGIZED

## Nanobubble Affect





## **Ionized Surface Tension Technology System 50 GPM Neutral Electrolyzed Water**

AquaFew Technology LLC

Carl Halterman, Owner

509-393-8417



## AQUAFEW DUAL STT SYSTEM WITH HYDROGEN SEPARTION “ACIDC WATER AND ALKALINE WATER”

### **The Benefits of using STT systems**

STT system took over 4 years to create the type of electrolysis needed for stable electrolyzed water (EW) solutions that exceed regulations set through government standards. STT equipment is built around the science of electrolysis. Our applications are stable and are used for several applications in the food industry from farm to fork and beverage, etc. We are a company that has designed and assembled with licensed partner for the beverage industry for over 30 years.

### **The Key Qualities of Water**

The brewing process water needs to be adjusted prior to passing though SST either from direct source or Reverse Osmosis. Naturally occurring minerals in the brewing source water should maintained to suit the base process water required for various brews and should not be removed. When source water enters the STT system, bacteria, pathogens, and viruses are eliminated. All minerals are maintained in suspension.

The STT through electrolysis can produce a neutral pH water as the standard., STT can also produce an increased pH water if required. STT through the control panel, will increase the hydrogen level that triggers the antioxygen potential of electrolysis for a correct Oxygen Reduction Potential (ORP) for molecular Hydrogen (H<sub>2</sub>) molecules.

STT Dual system with added B chambers will separate the two hydrogens in water. Acidic and Alkaline water. There will be two chambers which will have anode and cathode charge which will enhance the alkaline pH and reduce the acidic pH with increase ORP and hypochlorous acid level.

Alkaline water pH can be adjusted to a pH level of 8.5 to 9.7 for drinking water or flavored water for drinking.

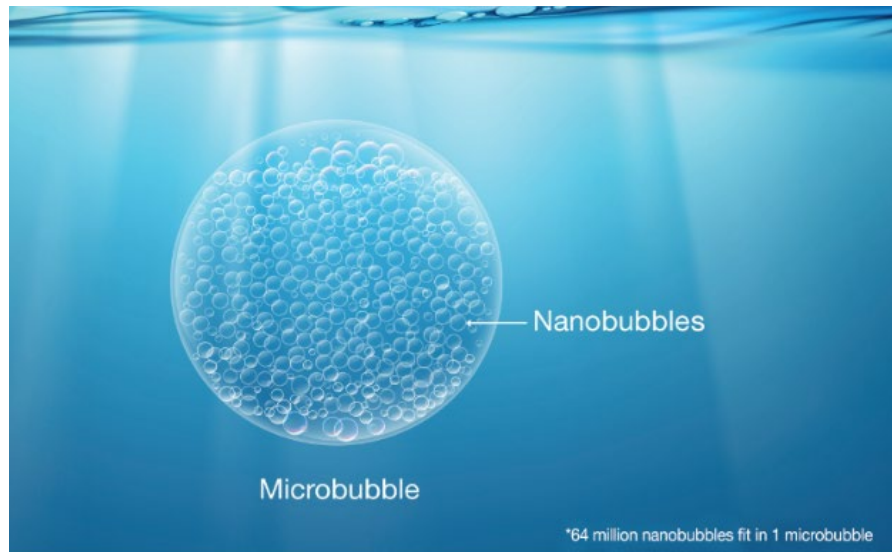
Acidic water can be used for CIP sanitation, facility sanitation and Ready to Eat products packaged or unpackaged food products. Acidic water pH can be set at 3.0 to 5.5, HOCl between 40 to 120 ppm and ORP at 800 to 1000+pmV.

### **Reduced Water Surface Tension**

Reduced water surface tension and increased hydration is the main focus of for brewing industry EW applications. The reduction of an average thirteen to fifteen water clusters to less than two, breaks down the water surface tension to make it ideal for CIP and SIP applications. The reduced surface tension, the stable pH, and ORP of the water permeates solids easily, reduces caustic use, cleaning time, and eliminates bacteria and yeast. It is also proven to significantly increase cellular hydration or the ‘fresh life’ of Ready to Eat (RTE) foods and will almost certainly improve the steeping process of raw grains prior to malting and prevent mold formation.

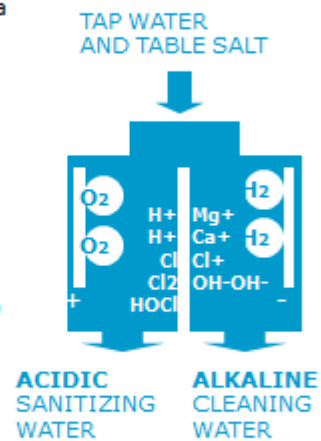
This enhances overall surface coverage as well as cellular hydration and can be adjusted from 5.5 to as high as 10.5 pH if needed.

## Nanobubble Surface Tension



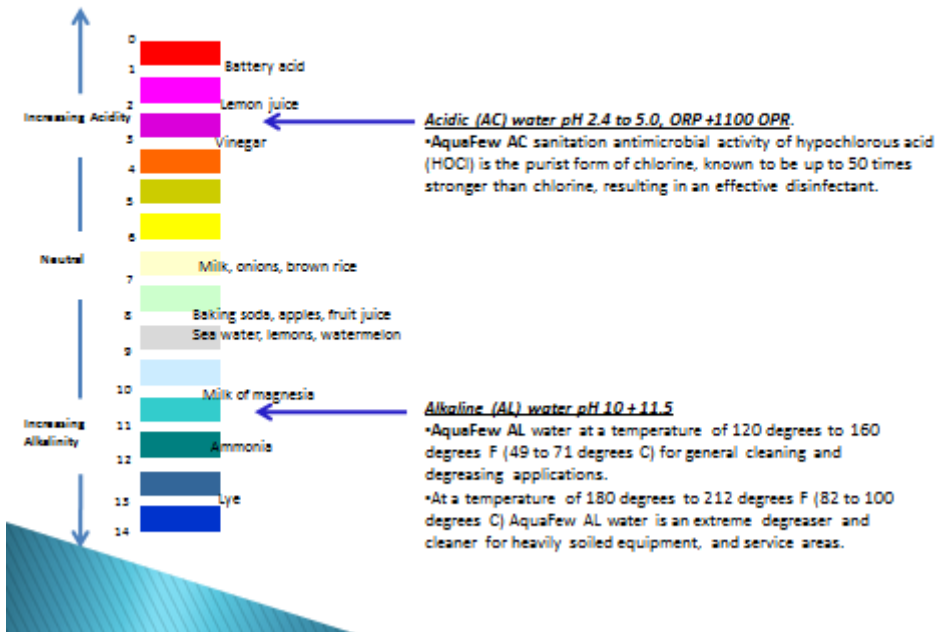
### What is Electrolysis?

- An electrochemical process by which electrical energy is used to promote chemical reactions in a conducting solution with electrodes (anode +, cathode -)
- Anions ( $\text{Cl}^-$ ,  $\text{CO}_3^{2-}$ ) are attracted to the anode and cations ( $\text{Na}^+$ ,  $\text{Ca}^{2+}$ ) are attracted to the cathode.
- Oxidation (loss of electrons) occurs at the anode and reduction (gaining of electrons) occurs at the cathode.
- Redox potential oxygen reduction potential (ORP) characterizes the activity of electrons in water.



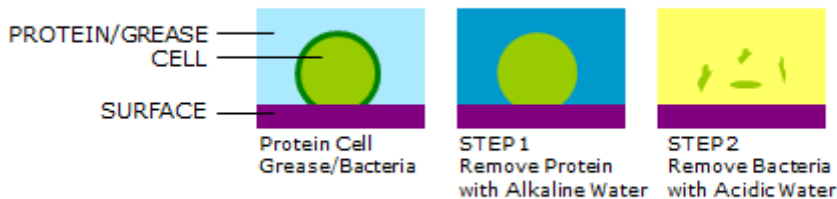
*Through electrolysis, AquaFew creates electrolyzed waters with a lower surface tension. It is this process that helps the water penetrate organic proteins which could carry pathogens.*

# AquaFews pH Levels



## Application

- Designed especially for sanitizing food contact surfaces
- Ideal for cleaning and sanitizing food manufacturing equipment.
- Successfully used by hotels, restaurants, hospitals, and others in place of the commercially available harsh chemicals for sterilization and cleaning purposes.
- The Process is two easy steps:





## **STT Cathode and Anode Chambers**

- Available in 4", 6" and 8" Electrolysis Cathode and Anode Chamber Tubes.
  - An electrical end cap for the positive and negative current connections.
  - An automatic source water flow control valve.
  - An ORP meter for measuring the +mV level of processed water in the range of 700 to 1000+mV
  - A control panel for the automatic control monitoring of the electrolysis process.
  - The power supply will control the percentage of current required across the electrodes.
  - A mild brine solution is used for conductivity "0002%" across the electrodes to start the electrolysis process.
  - The Anode and Cathode Chamber (CC) will suspend all the minerals and start the electrolysis process to reduce the surface tension of the water.
  - When the positive anode and negative cathode membranes are activated, the natural process creates an active ingredients of hypochlorous acid and sodium hydroxide respectively to create a neutral EW pH water.
  - Through electrolysis the ORP is increased to 650+mV to 1000+mV which creates antimicrobial properties for pathogen control.
  - Any pathogens that are present in the source water are neutralized as it enters the electrolysis process through the STT system.
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## **AquaFew ISTT 3 Chamber System**

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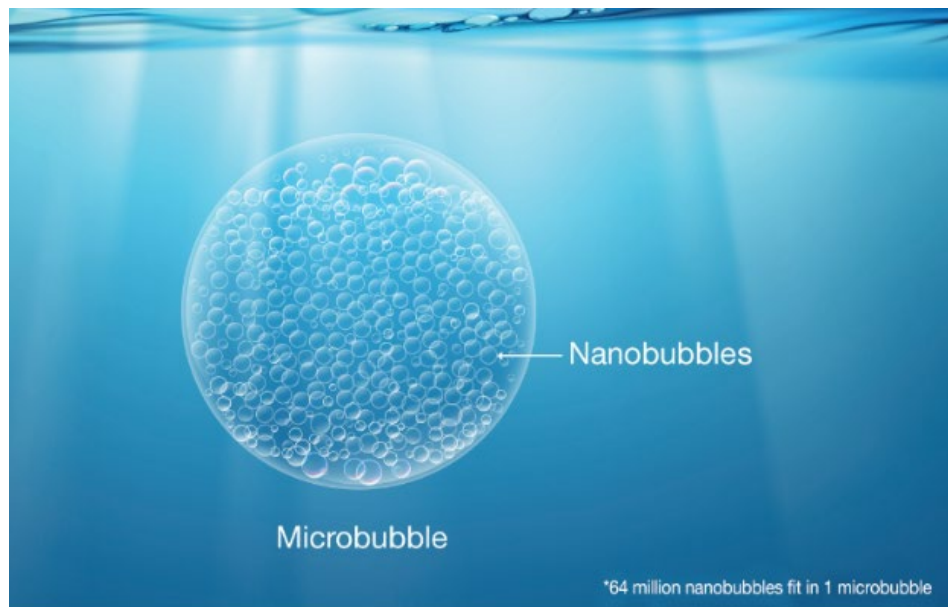
The brewing process water needs to be adjusted prior to passing through ISST either from direct source or Reverse Osmosis. Naturally occurring minerals in the brewing source water should be maintained to suit the base process water required for various brews and should not be removed. When source water enters the ISTT system, bacteria, pathogens, and viruses are eliminated. All minerals are maintained in suspension.

ISTT through electrolysis can produce a neutral pH water as the standard and separate the two hydrogens in water “acidic and alkaline water”. ISTT can also produce an increased pH level water if required. ISTT through the control panel, will increase the hydrogen level that triggers the antioxidant potential of electrolysis for a correct Oxygen Reduction Potential (ORP) for molecular Hydrogen (H<sub>2</sub>) molecules.

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## Reduce Surface Tension – Nanobubble product through ISTT EW System



### ISTT 3 chamber EW water system

## **ISTT Cathode and Anode Chambers**

- Available in 4", 6" and 8" Electrolysis Cathode and Anode Chamber Tubes.
  - 4", 6", 8" ISST EW chambers with 3", 4" and 6" dual chamber system
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