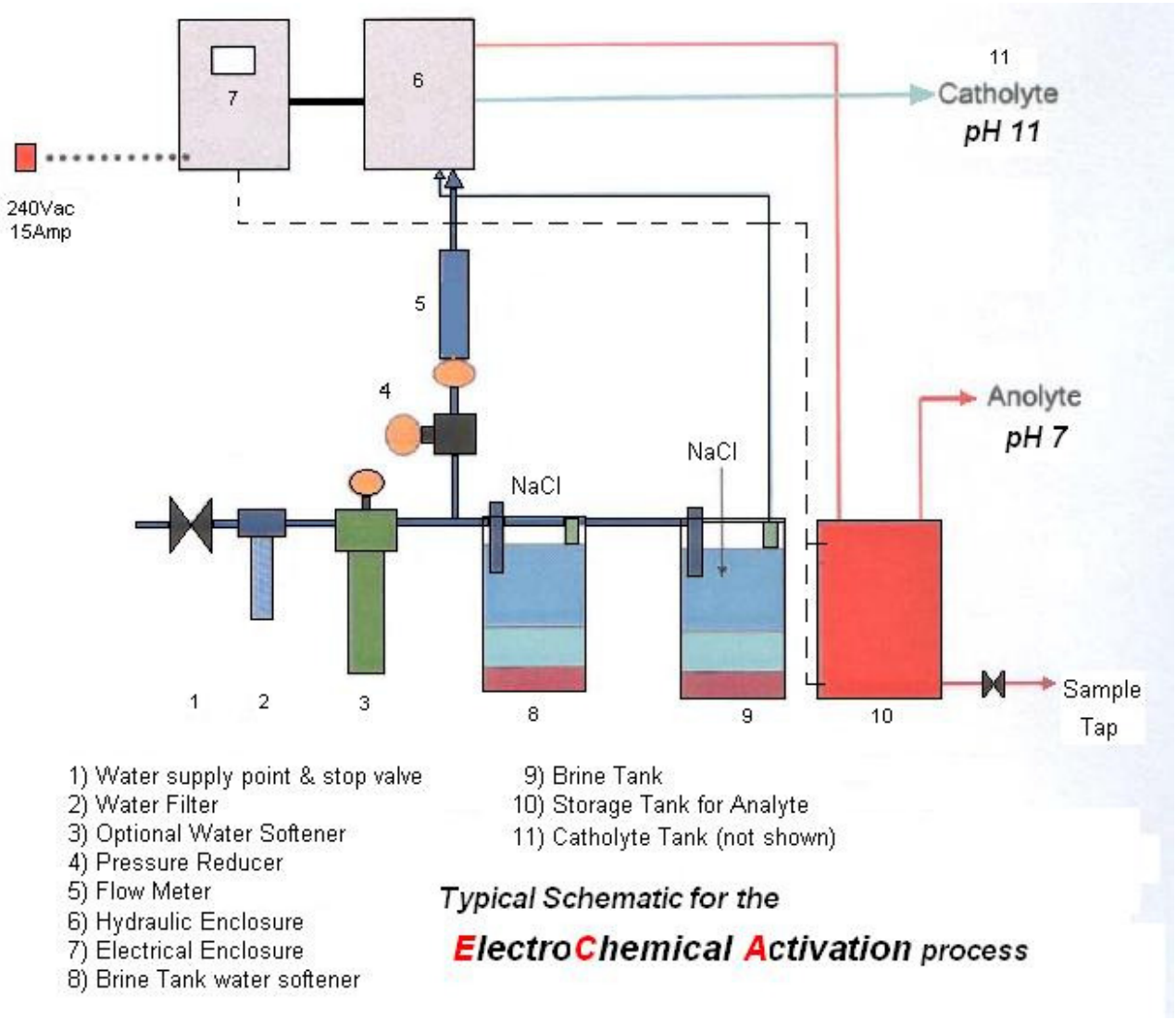
ECA WATER TREATMENT TECHNOLOGY.

Despite some similarities, this technology/system should not be considered a Chlorine Generator; it has taken the generation of disinfectants to a new level and one that warrants serious consideration.

Fig.9
Basic Electro Chemical ACTIVATION Schematic



Recent technological advances have now given us a new way to treat water safer than ever before i.e. without using toxic chemicals.

The technology is called **ECA – E**lectro-**C**hemical **A**ctivation.

What is it and how does it work?

Electrochemical Activation is (ECA) is the process of passing a very dilute saline solution made from ordinary potable water and salt through an electrical field created by a Cathode and Anode within a ***specially developed flow-through electrolytic cell*** to become activated to a higher energetic state.

The saline solution splits within the electrolytic cell to produce two highly activated solutions – a powerful disinfectant called **ANOLYTE** and a versatile detergent called **CATHOLYTE**.

The solution activated along the anode (Anolyte) is characterized by electron deficit and demonstrates oxidant properties with an Oxidation Reduction Potential (ORP) range of +600 to +1200mV. The solution is meta-stable and at **NEUTRAL pH**.

What is sometimes difficult to understand is that the main constituent of Anolyte is Hypochlorous Acid and yet with this type of new electrolytic cell, it is generated at pH7 thus producing a 'green' disinfectant that answers most, if not all of our Health & Safety issues we have with traditional toxic chemicals.

The solution activated along the cathode (Catholyte) is characterised by its anti-oxidant properties and is a mild alkaline solution with an OPR of -600 to -900mV.

Both solutions, generated from the natural and sustainable ingredients water and salt, are non-toxic, non-hazardous and environmentally friendly. They eventually revert to their original constituents as they return to their ground state.

How Does Anolyte Work Against Micro-Organisms ?

The activated solution [Anolyte] is electron deficient.

The Anolyte seeks to rebalance this by stripping electrons from the cell walls of micro-organisms causing their total collapse whilst Hypochlorous Acid enters the cell destroying the metabolism**. This electron deficiency and the ability to produce Hypochlorous Acid at Neutral pH are the key features that separate this technology from Sodium Hypochlorite Generators.**

The disinfectant process is therefore one of physical destruction of micro-organisms rather than simply eroding cell structures through chemical application.

This property, as well as achieving maximum kill rates in very short contact times, also ensures that no resistance is built up over time.

Does it work on Biofilm ?

Biofilm occurs on surfaces in contact with fluids particularly on the internal surfaces of pipes and tubes of all types.

Biofilm consists of multi-layered bacterial clusters embedded in an amorphous extracellular material composed of exopolysacchrides [EPS] of bacterial origin that cements the cells firmly to the surface and to each other. The build up of biofilm and the environment it creates for bacteria is often the cause of corrosion in pipework and inhibits flow of liquids.
ECA activated solutions (Anolyte) will destroy biofilm in metal, plastic and rubber pipework and in doing so destroy the environment in which bacteria thrive.

The process also ensures improved flow of liquids through pipework enhancing efficiency and because the solutions are non-corrosive (as opposed to chemical treatments) the life-time operation of pipework and plant is extended.

The micro-organisms both within the fluid and in the biofilm are also destroyed by the Anolyte ensuring that neither infectious bacterial populations nor their environments in which they survive are present.

ECA technology offers some significant advantages that can be summed up as follows;

- Removes the majority of all Health and Safety issues that are currently experienced with traditional chemicals
- Solutions generated are non-toxic, non-hazardous, non-irritant and virtually odourless
- Simplicity of design and compactness of equipment reduces costs of capital equipment and training of operators/maintenance personnel
- Compatibility of the technology with existing equipment means minimal disruption at technology change-over
- On-site generation means no inventory, storage or transport costs
- Due to neutral pH characteristics of solutions (Anolyte) reduced wear and tear on equipment prolonging service life
- No synthetic chemical residue and no waste disposal problems
- Ability to ‘dial in’ pH required for any particular application
- Has no precursor to encourage THM production