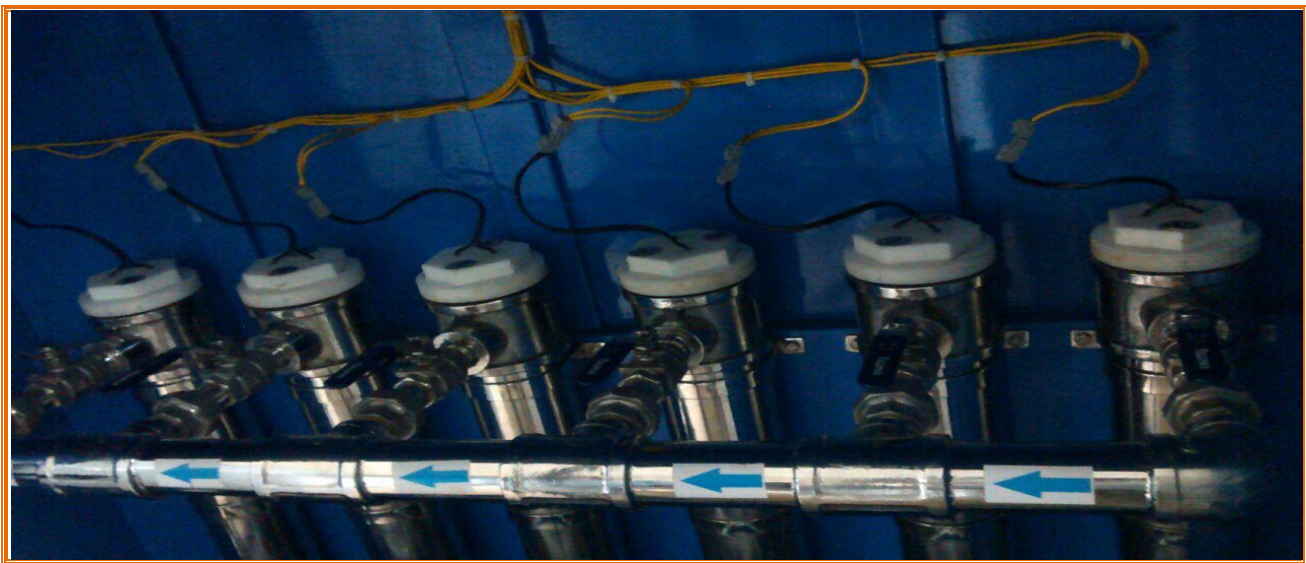


DUAL IONIZATION PLANT

Bharti Senco Dual Ionization Technology

Bharti Senco Dual Ionization is an innovative way to treat swimming pool water. It is a simple process in which a small electrical voltage is applied between two copper/silver alloy electrodes. The resulting current flow causes metal ions to be deposited into the water. Ionization may be thought of as an automatic feeder in which the output of copper and silver can be easily increased or decreased as needed. A copper test kit is provided to allow verification of the correct copper level. BHARTI SENCO systems are based on constant current control which offers the most accurate delivery of copper and silver over the widest range of water chemistry, electrode wear, and fouling.



Performance Comparison of Dual Ionization with Chlorination

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| <ul style="list-style-type: none"> • Dual Ionization • No Smell • No burning of eyes, irritation of skin • No change in pH of water • Kill algae, bacteria, virus and no dry brittle Hair • No corrosion to pipe lines, filters pumps, starter • No cancerous by products are formed • No Toxic fumes and not dangerous to store and handle • Not harmful to lungs | <ul style="list-style-type: none"> • Chlorination • Bad odor • Burns eyes & irritates skin • pH varies during chlorination • Kills algae, bacteria and does not kill virus Hair becomes dry and brittle • Corrodes the entire system • Forms cancerous by products and gets absorbed through skin • Gives Toxic fumes, and quite dangerous to store and handle • Linked to asthma (25% of Olympic swim team was diagnosed with asthma due to exposure to chlorine) |
|---|---|

The Science

During the process of ionization, metal is lost from one electrode while charged ions are attracted to the other. This results in the depletion of one electrode and the fouling of the other. By alternating electrode polarity, BHARTI SENCOS a system allows both electrodes to be used efficiently while providing a degree of self cleaning.

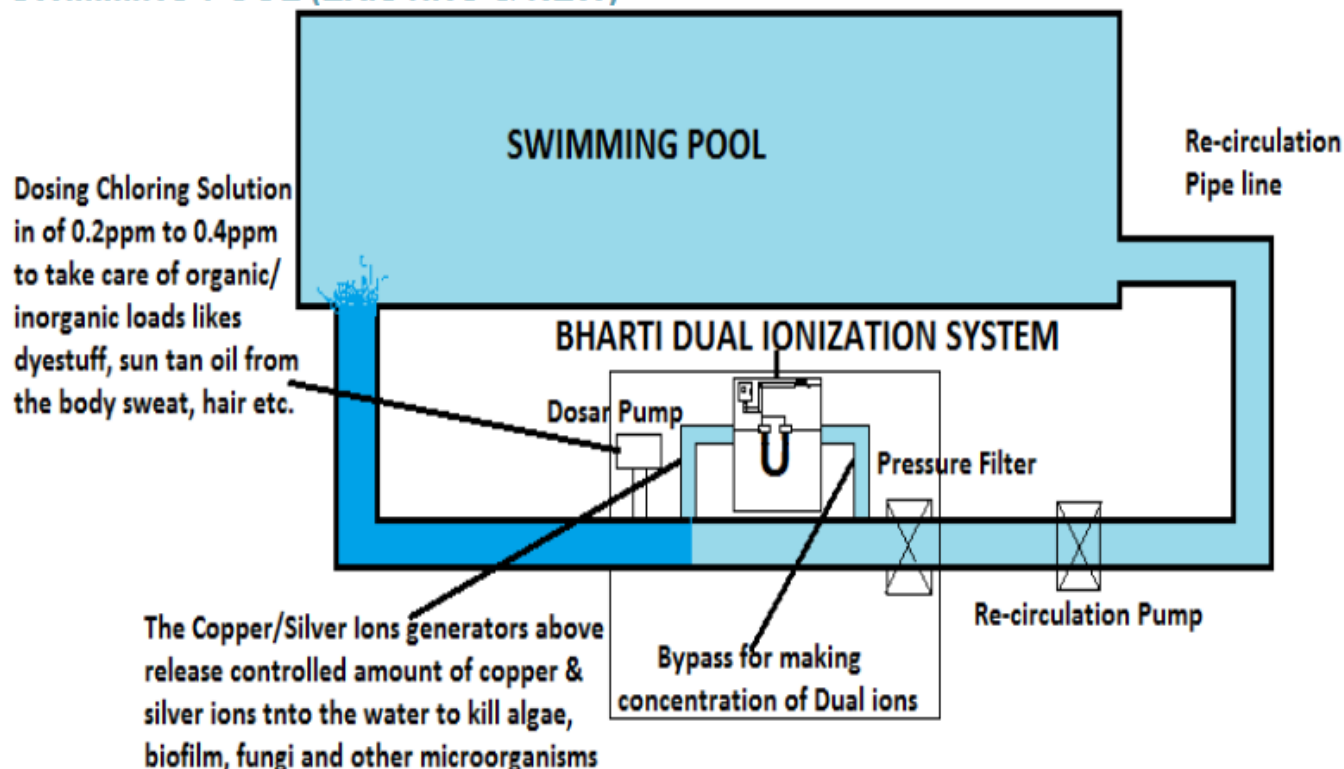
Electrode life will depend on pool size, water conditions, swimmer loading, weather, and many other factors. Although electrodes have been reported to last 6 to 12 months. Unlike other common water treatment methods, copper and silver offer very strong residuals which are not affected by sunlight, heat, or time. During peak days of intense sun and heat or throughout the winter while the pool is closed copper and silver will remain in the water. Only as algae, microorganisms, or other organic debris are introduced into the water will the copper and silver be consumed and flushed from the pool.

The process that causes an element to gain or lose electron is called ionization. Dual ionization is the process where two different positively charged ions are produced from an electrode alloy by passing a calculated amount of current.

How does Dual ionization work?

A low voltage, alternating DC current is passed through a set of metallic alloy electrodes, which are placed in the electrode chamber System and set slightly apart from one another. The voltage causes some of the outermost atoms of the electrodes to lose an electron, thus becoming positive ions, which attempt to flow across the space between the electrodes, but instead are carried away by the flow of water. The electrodes are located in the Electrode Chamber in the equipment. A separate control box supplies a variable, low-voltage DC charge to the electrodes. A small quantity of chlorine of order of 0.2 mg/lit to 0.4 mg/lit is required to take care of organic/inorganic loads like dyestuff from swimmers clothes, sun tan oil from the body, body sweat, hair, etc. More over it creates a synergetic action where by the micro organisms are killed instantly.

LAYOUT FOR INSTALLATION BHARTI DUAL IONIZATION PLANT IN SWIMMING POOL (EXISTING & NEW)



Every swimming pool will have a recirculation system comprising of pressure sand filters, pumps etc which will be housed inside a room. We can fix the equipment inside this room and can take by pass connection from the outlet of the filter and connect it to the pool. The control panel has indications to show that electrode is working, electrode needs cleaning, electrode is worn out. It also has the provision to increase or decrease the dosage

Electrical

On an average 8 day the power consumption would be about 50 kwh per year for a Pool of 2 Lakh liters capacity. Bharti Senco Water Ionize releases copper and silver ions into the water system through its specially designed flow-cell chamber that houses a pair of copper/silver alloy electrodes. The Copper/Silver Ion Generators above release controlled amounts of copper & silver ions into the water to kill algae, biofilm, fungi and other microorganisms. It is a well-documented fact that copper and silver ions kill algae, bacteria, viruses, MRSA, coliforms, Salmonella, Streptococci and even Legionnaire's Disease. These ions provide residual, long term, nontoxic purification and prevent any recontamination. They maintain a continuous, cumulative, residual disinfection process automatically while allowing you to reduce chemical usage dramatically. This will prevent biofilm formation, blocked water passages and severe deterioration of metal surfaces.

The United States dictate a maximum value of 1 ppm of copper and a maximum value of 0.1 ppm of silver, (EPA, National Secondary Drinking Water regulations, 2002) The maximum value requires for copper silver ionization is 0.6ppm and 0.06ppm respectively.

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Environment Management



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Occupational Health & Safety Management