

# ELECTRO CHLORINATOR



**MP RANGE Electro chlorinators 25 to 400 g/hr**

## Clean, safe water at the touch of a button

To enjoy the benefits of a swimming pool or spa, the quality of the water is of paramount importance. A major defence against water born microorganisms is Chlorination, the disadvantage of using commercially supplied Sodium Hypochlorite is the need to have bulk supplies, which need to be stored and handled safely. The MP range of on-site electro chlorinators helps you eliminate these problems giving you an on-demand system providing a better working environment in your plant room. Clean, Clear, Safer water to enjoy.

## Benefits of using Electro chlorination in your pool

- Excellent water quality
- A pleasant bathing environment
- Treatment of complete re-circulating water flow
- Simple and easy to maintain
- Does not require daily maintenance
- Range of sizes to suit different demands
- Wall mounted compact design
- UPVC electrolyzer and degassing column fitted to control panel
- Force air ventilation through control panel and electrolyzer assembly
- Colour coded display indicates systems status at a glance
- Safe and reliable method of producing chlorine on-site
- Common salt as base material is nontoxic, easy to store and handle
- Low operating costs, world-wide use
- Fresh hypochlorite is always at hand
- Approved disinfection method complying with the drinking water regulation



## Clean, safe water at the touch of a button

### Application

The MP range of electro chlorinators is a modular design, compact enough to fit into any circulating water treatment system in a swimming pool or spa. It will generate, on demand, a low strength Sodium Hypochlorite solution suitable for any swimming pool or spa.

The MP range will produce from 25g/hr to 400g/hr depending on the model chosen allowing most sizes of pools or spas to be treated.

## Electro chlorination

The process of generating Sodium Hypochlorite Solution from three commonly available materials: **Salt, Water, and Electricity.**

This simple process occurs when a salt solution flows between a series of electrodes. A DC voltage applied to the electrodes causes a current to pass through the salt solution, which results in a chemical reaction, producing a safe to use, low strength Sodium Hypochlorite Solution. The solution can be stored in a product tank and used in the same way as a commercial Sodium Hypochlorite.

This on-demand process reduces the need to store large volumes of hazardous disinfection on site and at a considerably safer concentration.

The low strength solution has the benefit of a neutral pH compared to other forms of disinfection chemicals.

This can be advantageous where maintaining a pH is important, such as in swimming pools.

Additionally, electrolytically generated Sodium Hypochlorite solution does not degrade or "gas off" as commercial Sodium Hypochlorite.

The process of “On-Site Generation” of sodium hypochlorite is accomplished by combining sodium chloride (NaCl), water (H<sup>2</sup>O) and electricity within an electrolytic cell. The produced solution has a concentration of approx 0.85% by weight with approximately 7 g/l of free chlorine.

The following equation illustrates the electrochemical reaction which takes place. NaCl + H<sup>2</sup>O + 2e = NaOCl + H<sup>2</sup> Salt + Water + Electricity = Sodium Hypochlorite+ Hydrogen

As opposed to commercial hypochlorite, which has a strength of approx 12-15%, the on-site generated sodium hypochlorite has a much lower off-gassing as a result of degradation, causes minimal scaling and crystallization at feed points, and a much lower impact on pH of finished water.

On-site generation process starts with a concentrated brine solution. This is created by saturating pure vacuum dried salt into soft water solvent to create a concentrated brine solution of approx 315 g/l.

The solution is then filtered and mixed with softened water to produce the electrolyte needed to allow the efficient transfer of salt to sodium hypochlorite. The soft water and saturated brine solution flow rates are controlled by two peristaltic pumps, and the two solutions are mixed before entering the electrolytic chamber.

The electrolytic chamber consists of 4 bipolar electrolytic cells, which once fully submerged allow current to pass through the electrolyte forming sodium hypochlorite and hydrogen from the electrolyte solution.

The hypochlorite solution passes immediately into a degassing column to ensure 95% of the total hydrogen produced is removed

from the solution before it is passed onto the sodium hypochlorite storage tank.

Due to the explosive nature of hydrogen both the electrolytic chamber and degassing column of the Electro chlorinator are constantly purged by air to ensure that any hydrogen leaks are immediately reduced to below the Lower Explosive Limit (LEL) of hydrogen. This air jacket then flows out of the Electro chlorinator surrounding the hydrogen ventilation hose and dilutes the produced hydrogen below the LEL before it is safely vented from the building.

By this method any risk of ignition of the hydrogen produced is removed both from the basic operation of the Electro chlorinator or by the failure of any sealing component within the Electro chlorinator.

Throughout the electrolytic process, softened water produced within the unit is used to ensure the longevity of the system and prevent scale deposition on the surface of the electrodes. The softened water is used in two processes (a) it dissolves food grade salt in a brine tank (b) dilutes the brine solution to a concentration which is suitable for the electrolytic process.

The diluted brine solution flows between 4 bipolar electrodes within an electrolytic cell. The chemical reaction to generate the sodium hypochlorite is then initiated as a DC voltage is applied across the electrodes causing the conversion of the brine into sodium hypochlorite.

The sodium hypochlorite flows into a second chamber, where the by-product (hydrogen gas), is separated from the solution and safely vented to the atmosphere.

How it works

System Summary

Electrical Requirements	230 VAC,Single Phase, 50Hz
System Water Requirements: Water Temperature Water pressure	8°C to 15°C 3 to 6 bar at inlet to the water softener
Ambient Air Temperature:	5°C to 40°C
Salt Requirements:	Pure dried vacuum salt, free from flow binders
Control Panel:	Steel construction, featuring a HMI (Human Machine Interface) touch screen,featuring on-screen diagnostics for operator fault finding.
Electrolyzer Power Supply	Highly efficient switch mode,providing reliable DC power supply to the electrolyzer.
Water Softener	Duplex softener, with twin softener resin beds and automatic resin regeneration.

MP RANGE Electro chlorinators ideal for any size pool

SYSTEM OPERATING PARAMETERS

Model	Mp 25	Mp 50	Mp 100
Capacity	25g/hr	50g/hr	100g/hr
Solution Strength	0.65 % to 0.8%		
Weight	20 kg	20 kg	20kg
Soft Water	4.2 l/hr	8.1 l/hr	15.5 l/hr
Brine Flow	0.4 l/hr	0.8 l /hr	1.5 i/hr
Hypochlorite Flow	4.6 l/hr	8.9 l/hr	17 l/hr
Typical Salt Consumption (During Operation)	100g/hr	200g/hr	400g/hr
Typical Power Consumption (During Operation)	140watts/hr	280 watts/hr	560 watts/hr

Model	MPX200	MPX400
Capacity	200g/hr	400g/hr
Solution Strength	0.65 % to 0.8%	
Weight	25 kg	25 kg
Soft Water	3.5 l/hr	70.1 l/hr
Brine Flow	3.5 l/hr	7.1 l/hr
Hypochlorite Flow	38.5 l/hr	77.0 l/hr
Typical Salt Consumption (During Operation)	800g/hr	1.65kg/hr
Typical Power Consumption (During Operation)	1.1watts/hr	2.2 watts/hr

