

Wallace & Tiernan® Process Systems

OSEC®-S Electrolytic chlorination system

The OSEC®-S electrolytic chlorination system was developed for the generation of sodium hypochlorite through the electrolysis of sea water or natural brine. The main advantage of this unit is that no artificial brine is required but that sea water or natural brine can be directly used, thus providing a significant reduction of operating cost. The cell design improves efficiency, helps retard scaling and simplifies maintenance. Production of sodium hypochlorite solution takes place in once-through membraneless cells.

Applications

- Disinfection of swimming pool water, seawater and brine pools
- Disinfection of cooling water

General

Electrolysers built to the tubular cell process, which are used as an alternative to chlorine gas systems, provide many safety features. Risks inherent in the transport, handling and storage of chlorine gas or commercial sodium hypochlorite solutions are eliminated. Local regulatory issues often limit the use of chlorine gas for safety reasons.

OSEC® systems produce directly on site sodium hypochlorite from sea water or natural brine and electricity. In most cases the natural brine is diluted prior to use. Generation takes place on demand only. The hypo produced in batch operation does virtually not degrade in strength even if it is stored over an extended period of time.

The anodes used are made from titanium with a precious metal coating. This construction allows to grant a five calendar years warranty after installation and commissioning. The cathodes are made from a

Benefits:

- Non-hazardous basic products
- Rugged compact construction
- Customised design
- Capacities up to 5000 g/h Cl₂
- Virtually operator-free performance due to programmed electrode cleaning cycle
- Long life anodes
- PLC controlled system
- Facility to meter solution to multiple points of application
- Highly economical
- Low energy consumption
- Easy installation and start-up



Product Sheet

Water Technologies

SIEMENS

special grade Hastelloy® C. Automatic control of the supply voltage combined with a programmable periodic cleaning cycle of the monopolar electrodes by dilute hydrochloric acid ensure a virtually operator-free performance. The number of anodes in the electrolyser can be customised to produce the desired quantity of chlorine. This system flexibility provides a significant reduction in power requirements and plant cost.

A PLC control system provides for the fully automatic operation of the unit including all control, monitoring, alarm and interlock functions. Having set the flow rates for e.g. sea water, all that remains on site is to turn the start switch. Metering of the sodium hypochlorite solution is achieved by manually or automatically controlled dosing or centrifugal pumps.

Technical data

Capacity ranges:

Type	Capacity in g/h Cl ₂	Dimensions (W x H x D) in mm	Weight in kg
OSEC-S 150 S	up to 500	1500 x 1900 x 540	220
OSEC-S 150 M	up to 1000	1500 x 1900 x 540	240
OSEC-S 150 L	up to 2000	1500 x 1900 x 540	280
OSEC-S 200 L	up to 5000	1600 x 1900 x 540	330

Shipping weights do not include rectifier and storage tanks

Power supply:

400 V, 50 Hz, 3/N/PE

Power consumption:

4 – 5 kWh per kg of equivalent chlorine, depending on the salt content and the temperature of the sea water resp. of the diluted brine

Requirements for sea water resp. diluted brine:

Temperature: min. 10 °C
 Temperature: max. 30 °C
 Salinity (sodium chloride): min. 17 g/l
 Mesh size of strainer: max. 0.5 mm
 Manganese content: max. 0.01 mg/l

Sodium hypochlorite strength:

max. 2 g/l equivalent chlorine

The strength is a function of salinity and temperature of the sea water resp. of the natural brine

Operation

Filtered sea water is fed into the electrolyser cell. The DC current applied produces sodium hypochlorite and hydrogen. Heat transfer and the formation of gas result in a lifting effect that accelerates the separation of the hydrogen from the electrolyte. The hydrogen together with the sodium hypochlorite solution is discharged into the hypo storage tank. An air blower is used to dilute the hydrogen to well below its flammability limit and to force ventilate it to a safe outdoor discharge point.

Since OSEC®-S systems are operated with a constant seawater flow rate, the strength of the sodium hypochlorite produced is determined by varying the DC current input. Depending on the electrolyser capacity the strength of the sodium hypochlorite solution produced is 1 – 2 g/l equivalent chlorine. Level probes installed in the hypo solution storage tank start and stop the electrolyser.

Installation and maintenance

The electrolyser system is shipped pre-assembled and pre-wired. On site just an electricity supply and operating water have to be connected and the sodium hypochlorite metering system has to be installed. For these works, the correct installation and regular maintenance, we recommend our specially trained technicians. Wallace & Tiernan® electrolyser systems are certified to § 191 WHG (Water Household Regulations).

Siemens
 Water Technologies

 Germany:
 +49 8221 9040
 wtger.water@siemens.com

 United Kingdom:
 +44 1732 771777
 wtuk.water@siemens.com

© 2008 Siemens Water Technologies Corp.
 WT.085.065.000.EE.PS.1008
 Subject to change without prior notice.

Wallace & Tiernan and OSEC are trademarks of Siemens, its subsidiaries or affiliates. Hastelloy is a trademark of Haynes International, Inc.
 The information provided in this brochure contains merely general descriptions of characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.