

Hypochlorite Generator and Ultrasonic Flow Meter

- Electrolytic generation of hypochlorite without additives or auxiliaries.
- Highly accurate non-invasive measurement of liquid flow.

Main Features

- Electrolytic decomposition of chlorine ions in water forms sodium hypochlorite and hydrogen.
- Sodium hypochlorite turns into hypochlorous acid (HClO) in water, providing an effective means of disinfection.
- Non-invasive ultrasonic flow meter provides highly accurate measurements (1 mm/s) without constricting pipe diameter.



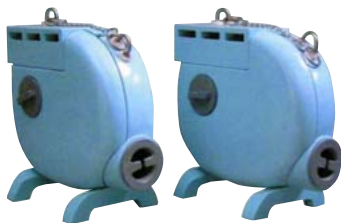
Power controller
Touch-board type



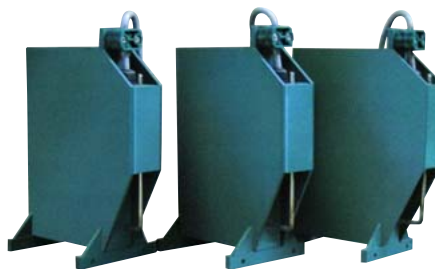
Standard electrolysis device
Water immersion type



Ultrasonic flow meter



Electrolysis device



Electrolysis device

Summary

Hypochlorite generator

Tap water normally contains chlorides in minute amounts. When these chlorine ions are used as a feedstock for non-membrane electrolytic decomposition, chlorine (Cl_2) is generated at the anode, while NaOH (caustic soda) and hydrogen (H_2) are produced on the cathode side. The hydrogen is a gas and is vented to the atmosphere. The chlorine and caustic soda react immediately in the liquid, producing sodium hypochlorite (NaClO), which provides a disinfectant effect.

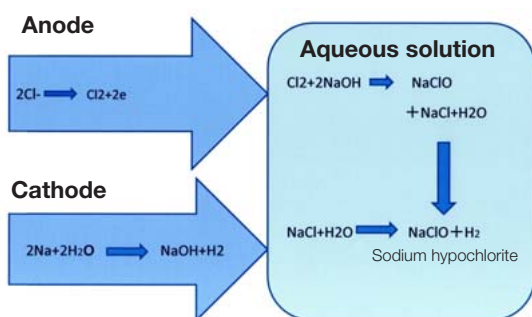
Refer to the diagrams in Principles of Operation (2) and (3).

Ultrasonic flow meter

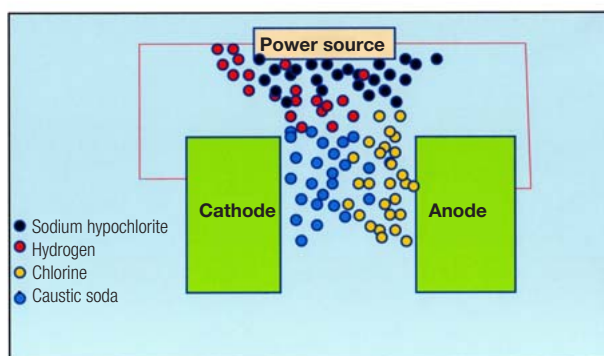
Refer to the separate diagram for the principle of operation and capabilities of the ultrasonic flow meter.

Flow meter can be installed without interrupting water service.

Principle of Operation of Electrolysis System (2)

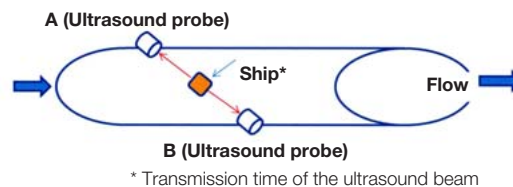


Principle of Operation of Electrolysis System (3)



Principle of Operation and Capabilities of Ultrasonic Flow Meter

The pipe illustrated below will be used to explain the principles of operation.



- (1) Acoustic waves continuously travel back and forth between A and B.
- (2) When the flow is from the left, the transmission time from A accelerates, and the transmission time from B decelerates. When the flow is zero, the time needed for A→B and the time needed for B→A are the same. When a flow exists, a time difference occurs that is proportional to its speed.
- (3) The principle of operation is to measure this amount of change that accompanies the differential transit time even with flows as low as 1 mm/s.
- (4) Consequently, a flow rate of 1 mm/s can be measured; the upper limit is the critical strength of the pipe.
- (5) Technically, the pipe diameter can be as small as narrow tubing, but the minimum diameter used in water systems is around 100 mm. There is no upper limit.
- (6) Reflection, refraction, dispersion, attenuation, etc., of the ultrasound waves by substances mixed into the flow will cause errors. Under continuous mixed conditions, electronic circuitry can be used to filter the signals (to eliminate the source of error), but in this case, the high sensitivity that is characteristic of this product will suffer.

Installation Examples

- Monks from the Ichinyoan Hermitage of Todaiji Temple in Nara, Japan volunteered to dig wells in Cambodia to ensure safe drinking water. We had the pleasure of assisting them with our hypochlorite generator.
- Yamaha Motor Co., Ltd. is considering the use of our hypochlorite generator in disinfection equipment of their mini-water purification plant to ensure safe water for domestic use in Indonesia.

Benefits

Hypochlorite generator

Can reliably make drinkable water by increasing the disinfection effect by boosting low chlorine concentrations in water distribution reservoirs and water storage tanks by electrolytic decomposition without adding chemical solutions.

Ultrasonic flow meter

Can measure flow volume with high accuracy without constricting pipe diameter; can be used even when straight pipe lengths are short.

Can be installed and maintained in short periods of time without interrupting water service.

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