

HYPOGEN

ELECTRO-CHLORINATION SYSTEM

The Electro-chlorination System is a facility that obtains hypochlorite (NaOCl) by electrolyzing seawater and is also referred to as the "Hypo-chlorite Generation System". It plays a role in suppressing the problem in which algae or fish and shellfish propagate in the cooling system of power plants, steel mills, petrochemical facilities and others that use large amounts of sea water as cooling water for equipment, that is, bio-fouling (damage caused by attachment of marine organisms).

Among the various methods of preventing industrial bio-fouling, seawater electrolysis system-facilities that are installed directly on-site are easy to handle, can be operated independently, and are safe because they produce chlorine directly on the site, and are eco-friendly because they do not produce sludge or by-products.



Bio-fouling
Attachment of organisms
(Bacteria and oysters attached
to the pipe in the water)

전기분해장치의 원리

- ① Chlorine ion (Cl^-) oxidation reaction at anode(+) : $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$
- ② Water molecule (H_2O) reduction reaction at cathode(-) : $2\text{H}_2\text{O} + 2\text{e}^- \rightarrow 2\text{OH}^- + \text{H}_2 \uparrow$
- ③ Final reaction : $2\text{NaOH} + \text{Cl}_2 \rightarrow \text{NaOCl} + \text{NaCl} + \text{H}_2\text{O}$
- ④ Side reaction : Mg^{2+} , Ca^{2+} , and ions are combined to form Suspended Solids on the cathode
→ Periodic acid cleaning is required (removal of current efficiency reduction factor)

+ Application

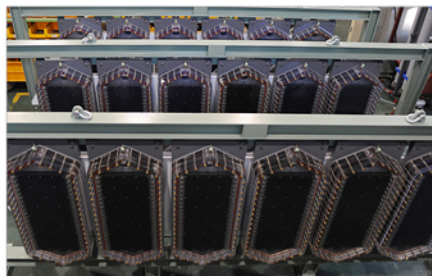
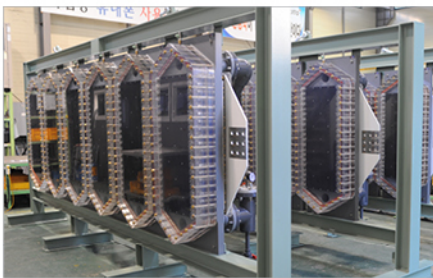
- Power Generation
- Ballast Water Treatment
- Drinking Water Treatment
- Aquatics & Swimming Pool Facilities
- Wastewater Treatment

Safety
(Non-hazardous)

Efficiency
(Easy to Operate)

Profitability
(Saving on deliveries)

+ Installation Photos



WESCO

Founded in 1993 for the purpose of manufacturing and supplying insoluble anodes, Wookyoung Electrolysis Systems Co., Ltd. has developed titanium anodes and electrochemical technologies that can be applied to various industries. Based on the company-affiliated research center, we hold a number of patents. In 2016, we were reborn as a global partner in the electrochemical field based on excellent reliability and service with a new mission of Wesco Electrode Co., Ltd

Wesco
ELECTRODE

+ Major Experiences

Seawater Electro-Chlorination System

Project/Plant	End-user/Purchaser	Location/Country	Equipment	Specification	Year
Gangneung Anin Coal-fired power plant #1,2	Coway EnTech Co., Ltd.	Gangneung, South Korea	Hypochlorite Generator	Total 400 kg-Cl ₂ /hr (66.6 kg-Cl ₂ /hr x 6 Units)	2021
POSCO Pohang NO. 19 By-product Gas CCGP	POSCO Engineering Co.,Ltd.	Pohang, South of Korea	Hypochlorite Generator	Total 22 kg-Cl ₂ /hr (11 kg-Cl ₂ /hr x 2 Units)	2020
SinBoryung #1,2	POSCO Engineering Co.,Ltd.	Boryung, South of Korea	Hypochlorite Generator, T/R, etc.	Total : 336 kg-Cl ₂ /hr (48 kg-Cl ₂ /hr x 7 unit)	2015
Tongyeong Receiving Terminal	Samsung C&T Corporation.	Tongyeong, South of Korea	Hypochlorite Generator, T/R, etc.	Total : 40 kg-Cl ₂ /hr (40 kg-Cl ₂ /hr x 1 unit)	2014
Samcheok Receiving Terminal	Korea Gas Corporation (KOGAS)	Samcheok, South of Korea	Electro-chlorination System	Total : 180 kg-Cl ₂ /hr (60 kg-Cl ₂ /hr x 3 units)	2014
Pohang CCGP (Combined Cycle Power Plant)	POSCO Energy Co., Ltd.	Pohang, South of Korea	Electro-chlorination System	Total : 42 kg-Cl ₂ /hr (21 kg-Cl ₂ /hr x 2 units)	2013
Indonesia CCGP (Combined Cycle Power Plant)	POSCO Engineering Co.,Ltd.	Chilegon, Indonesia	Electro-chlorination System	Total : 66 kg-Cl ₂ /hr (22 kg-Cl ₂ /hr x 3 units)	2013
Hyundai Green Power Plant	Hyundai Engineering & Construction Co.,Ltd.	Dangjin, South of Korea	Hypochlorite Generator, T/R, etc.	Total : 30 kg Cl ₂ /hr (30 kg-Cl ₂ /hr x 1 unit)	2012
Hyundai Green Power	DAELIM Industrial Co., Ltd.	Dangjin, South of Korea	Electro-chlorination System	Total : 60 kg-Cl ₂ /hr (30 kg-Cl ₂ /hr x 2 units)	2009
POSCO FINEX CCGP & LNG Power Plant	POSCO Co.,Ltd.	Pohang, South of Korea	Hypochlorite Generator, T/R, etc.	Total : 120 kg-Cl ₂ /hr (45 kg-Cl ₂ /hr x 2 units, 15 kg-Cl ₂ /hr x 2 units)	2008
POSCO FINEX CCGP & LNG Power Plant	Daewoo Engineering & Construction Co.,Ltd.	Pohang, South of Korea	Hypochlorite Generator, T/R, etc.	Total : 15 kg-Cl ₂ /hr (15 kg-Cl ₂ /hr x 1 unit)	2005

Hypochlorite Generator

Project/Plant	End-user/Purchaser	Location/Country	Equipment	Specification	Year
Singory #5,6(KHNP)	TSK Engineering Co. Ltd.	Busan, South Korea	Electrolyser Cell Assembly	5kg-Cl ₂ /hr x 56 Cells (Mono-polar Type)	2020
KEPCO SPC Power Corporation	KEPCO SPC Power Corporation	CEBU, Philippines	Electrolyser Cell Assembly	7.6kg-Cl ₂ /hr x 2 Cells (Bi-polar Type)	2020
KRAKATAU POSCO Engergy	KRAKATAU POSCO Engergy	Chilegon, Indonesia	Electrolyser Cell Assembly	23 kg-Cl ₂ /hr x 2 Cells (Bi-polar Type)	2019
Sinboryung #5,6	KOMIPO (Korea Midland Power Co., Ltd.)	Boryung, South of Korea	Electrolyser Cell Assembly	18 Units (Bi-polar Type)	2020
Boryung Thermal Power Plant	KOMIPO (Korea Midland Power Co., Ltd.)	Boryung, South of Korea	NEP acquired Module skid	7.0kg-Cl ₂ /hr x 14 Cells (Mono-polar Type)	2020
Hadong Thermal Power Plant	KOSPO (Korea Southern Power Co., Ltd.)	Hadong, South Korea	NEP acquired Module skid	7.0kg-Cl ₂ /hr x 28 Cells (Mono-polar Type)	2020
LNG Combined Cycle Power Plant	GS EPS Co., Ltd.	Dangjin, South Korea	NEP acquired Module skid	8 Units (Mono-polar Type)	2020
Hadong Thermal Power Plant	KOSPO (Korea Southern Power Co., Ltd.)	Hadong, South Korea	NEP acquired Module skid	24 Units (Mono-polar Type)	2019
Boryung Thermal Power Plant	KOMIPO (Korea Midland Power Co., Ltd.)	Boryung, South of Korea	NEP acquired Module skid	7.0kg-Cl ₂ /hr x 21 Cells (Mono-polar Type)	2018
Ulsan Oil-Fired & CCPC	EWP (Korea East-West Power Co., Ltd)	Ulsan, South Korea	NEP acquired Module skid	6 Units (Mono-polar Type)	2017

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