

CHEMNIUM

NACLO

SODIUM HYPOCHLORITE GENERATOR

www.chemnium.com



CHEMNIUM[®]

ALL FOR BETTER WATER

SODIUM HYPOCHLORITE

NACLO

CONSIDERATION

SODIUM HYPOCHLORITE

UV

CHLORINE DIOXIDE

OXYGEN

CHLORINE GAS

?



ECONOMICAL;

ENVIRONMENTAL;

SAFE;

EASY OPERATION;

LOW CONSUMPTION;

STABLE PERFORMANCE;

ACCURATE DOSE;

LOW RISK OF ACCIDENT;

LOW FUTURE COST;

EASY STORAGE;

APPLICATION



**Tap Water
Disinfection**



**Food & Beverage
Processing
Disinfection**



**Waste Water
Treatment**



**Swimming Pool
Sterilization &
Algae Removal**



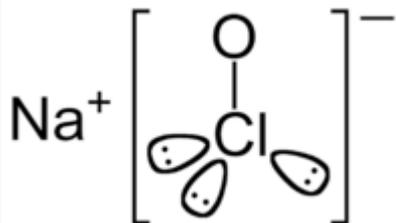
**Oil Drilling
Injection Water
Sterilization**



**Thermal Power
Plant for Cooling
Water Disinfection**

ANALYSIS		CHLORINE DIOXIDE	CHLORINE GAS	SODIUM HYPOCHLORITE
PRODUCTION	Formula	$\text{NaClO}_3 + 2\text{HCl} = \text{ClO}_2 + 1/2 \text{Cl}_2 + \text{NaCl} + \text{H}_2\text{O}$	$2\text{NaCl} + 2\text{H}_2\text{O} = \text{electrolysis} = \text{H}_2\uparrow + \text{Cl}_2\uparrow + 2\text{NaOH}$	$\text{NaCl} + \text{H}_2\text{O} = \text{electrolysis} = \text{NaClO} + \text{H}_2$
	Raw materials	Hydrochloric acid and sodium chlorate or sodium chlorite	Industrial salt	Salt water or sea water
		Hard to buy	Easy to buy	Easy to buy
STORAGE AND DOSE	Storage	Gas, can't be kept in storage	Pressure cylinder	PE plastic tank
	Dosing equipment	Siphon dosing of chlorine	Vacuum chlorine dosing machine	Meter Pump
	Dosing accuracy	low hydrolysis rate, inaccurate dosing	low hydrolysis rate, inaccurate dosing	high accurate
STATUS	concentration	$\text{ClO}_2 + \text{Cl}_2$ mixed gas	95%	0.5-0.8%
	Status	strong irritant gas, a highly toxic, explosive and leakage risk	strong irritant gas, a highly toxic, explosive and leakage risk	Stable low concentration liquid
	Byproducts	easily exceeded of Chlorate or chlorite, leading to contamination of the water quality	easily exceeded of Chlorate or chlorite, leading to contamination of the water quality	Highly safe disinfectant
	Smell on water	Strong chlorine smell	Strong chlorine smell	No smell

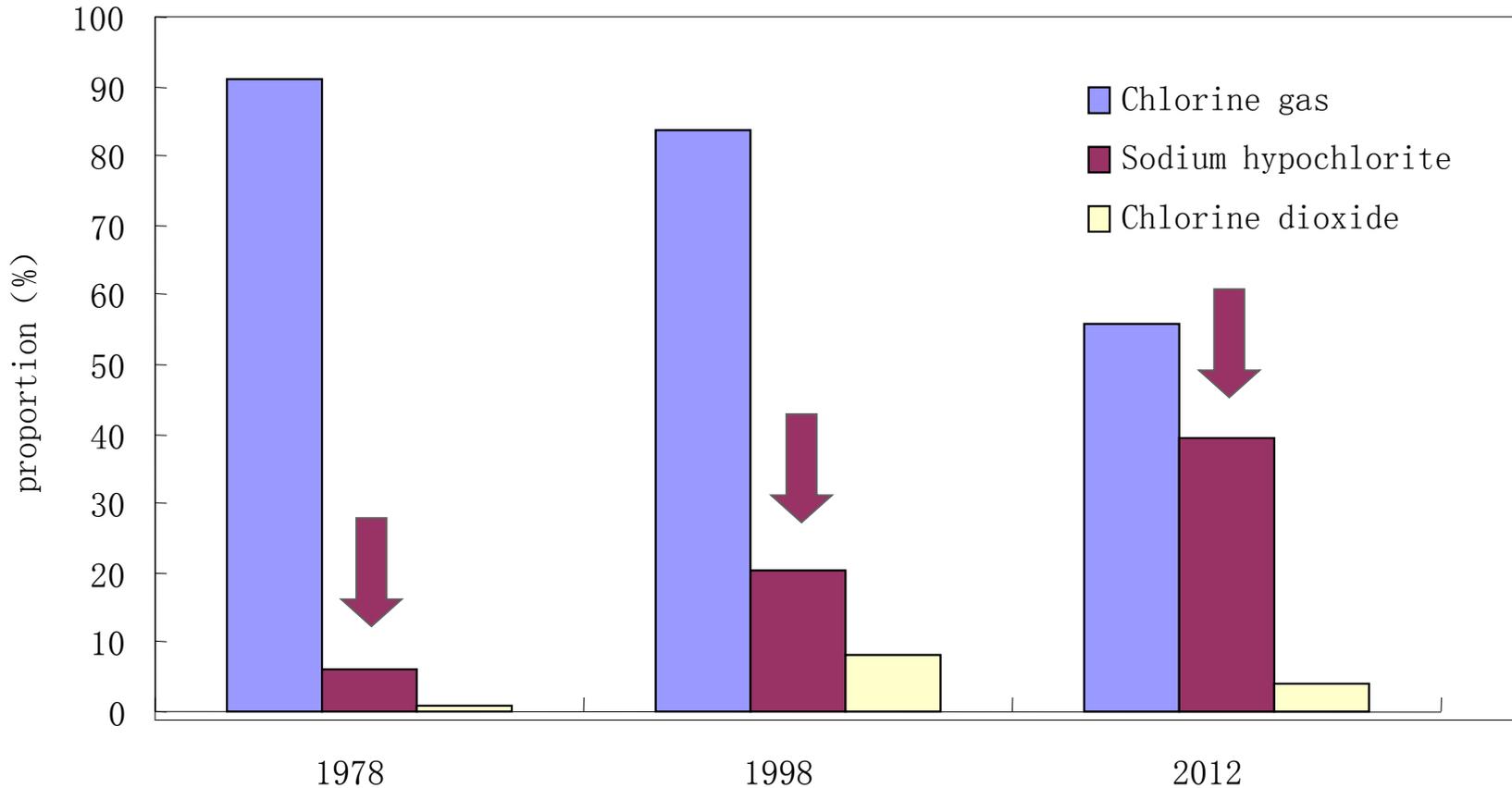
ANALYSIS		CHLORINE DIOXIDE	CHLORINE GAS	SODIUM HYPOCHLORITE
CAUTIONS	Leakage	Easily cost large-scale diffusion	Easily cost large-scale diffusion	Safe low concentration liquid
	Prevention	Strictly set chlorine leak absorption device	Strictly set chlorine leak absorption device	Flush and dilute with water when leakage.
MAINTAINANCE	Operation and Maintenance	Professional training course	Professional training course	No special requirements
	Pharmacy cost	High	Low	Low
	Equipment cost	High	High	Medium
	Operation and maintenance	High	High	Low



SODIUM HYPOCHLORITE / NaClO



Proportion of different water disinfectants in USA



Sodium hypochlorite is becoming more and more popular

Sodium hypochlorite generator summary

1、 Sodium hypochlorite generator

Sodium hypochlorite generator is a device to generate sodium hypochlorite solution by brine or sea water electrolysis. Composed of salt dissolving unit(If sea water, not needed), filter, diluting unit (If sea water, no needed), electrolytic unit, rectifying power supply, automatic control system, storage and dosing unit etc..

2、 The principle of sodium hypochlorite disinfection

Sodium hypochlorite, is a strong oxidizing agent with strong bactericidal and bleaching ability, have been widely using in drinking water disinfection, food processing, industrial or power system circulating water disinfection, hospital or sewage treatment, shipyard water treatment.

3、 Chemical equation



(Sodium hypochlorite)



(Decomposition into hypochlorous acid)



(The new ecological oxygen precipitation)

4、 The 3 weapons to kill virus:

1. The oxydation of HCl (Hypochlorous acid): break the balance of glucose metabolism;
2. O (new oxygen): Its strong oxidability will consume the protein of virus, make them lack of energy;
3. The Chloridion: disturb the metabolism of gen;

5、 Main technical indicators (Only suitable for Chemnium Machine)

Salt water concentration:	3%
Power consumption:	< 3.5KW/Kg.CL
Salt consumption:	<3.0Kg/Kg.CL (If sea water, no need salt)
Effective chlorine concentration :	5000-8000ppm (1000~2000ppm for seawater system)
Working mode:	Fully automatic
Anodic coating life :	>5 years
Cathode life :	>20 years
Machine life:	>15 years

Advantage

- The only raw material: salt, which is safety and convenient for transportation and storage, without any volatility and toxicity, neither any other high risk of leakage as chlorine gas.
- Electrolysis via low voltage DC, avoid dangerous source like high voltage, steam and high temperature.
- When breakdown occurred, shut down the system and won't make any harm to the facilities, working staffs or residents nearby.
- The low concentration sodium hypochlorite liquid will be kept in the storage tank as final product with stable condition for quite a long time.
- Liquid with concentration lower than 10000PPM (1%) will not drop down more than 10 % within 30 days, if it's well sealed and kept away from Sunshine and heat.
- Water dilution is the best way when leakage occur, without any harm for environment and human body, and the absorption device for chlorine gas leakage is not in demand.

SODIUM HYPOCHLORITE MACHINE

Technical specification

SODIUM HYPOCHLORITE GENERATOR

On-site chlorination system

SALT WATER & SEA WATER

Ideal for use in following applications:

- Recycling Water / Reuse System
- Large Aquatics and Pools
- Cooling Tower / Fire Water Systems
- Food & Beverage Processing
- Marine Vessels / Oil Platforms
- Oil Drilling Injection Systems
- Water & Wastewater Treatment Systems
- Hospital, Industrial & Commercial
- Swimming Pool & SPA Center
- Disinfection & Sterilization Systems

Thanks for the smart control system, no extra human resources is needed any more!
Besides that, the machine runs safe and quiet without any pungent smell!



CALCULATION EXAMPLE

Water to be treated:	500 tons water per hour
Available chlorine dosing rate:	2PPM (PPM= mg/L = g/ton)
Available chlorine needed per hour:	500 tons X 2 g/ ton = 1,000 g
Machine recommended:	CM-1K-NaCLO

Consumption analysis of 1KG available chlorine:
less than 3.3KW & less than 3KG salt (15%~30% Lower than others)

People needed: none, machine auto control by program



CHEMNIUM	NON-MEMBRANE MACHINE	MEMBRANE MACHINE
Concentration	up to 8,000 ppm (0.8%)	up to 1,250,000 ppm (12.5%)

Dosing standard of chlorine in different area

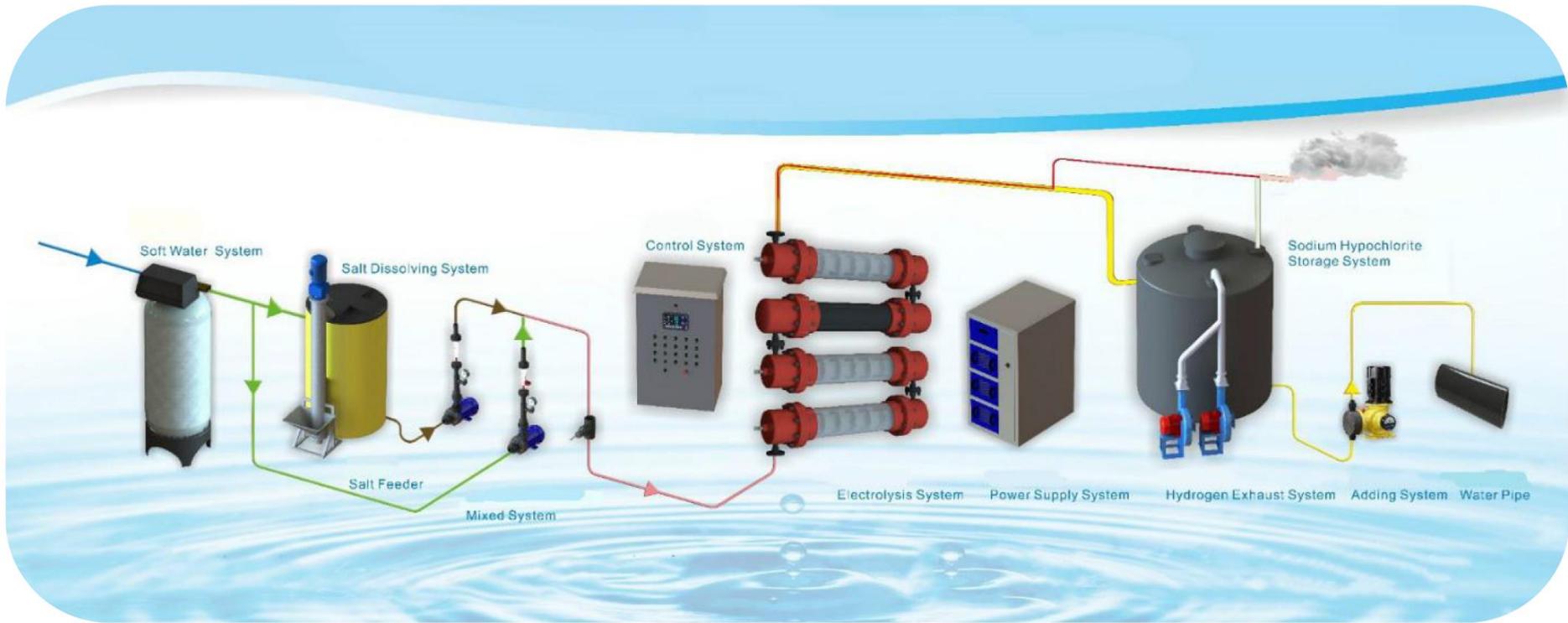
Potable water/ drinking water	1~3 ppm
Thermal power plant	3~5 ppm
Sterilization and algae removal of sea water	3~5 ppm
Water after waste treatment	5~10 ppm
Backfilling water of fuel industry	3~6 ppm
Water disinfection for waste water in hospital	30~50 ppm
Sterilization in Aquaculture industry	1~3 ppm
Sterilization in food industry	1~3 ppm
Public place sterilization	1~3 ppm
Swimming pool water treatment	3~5 ppm
Treatment for water with Cyanide	40~50 ppm
Fish pond water disinfection	2~5 ppm
Food machinery disinfection	200~500 ppm
Cloth bleaching	1,000~3,000 ppm
Paper bleaching	1,000~3,000 ppm

Note: 1ppm = 1 mg/L = 1g/T

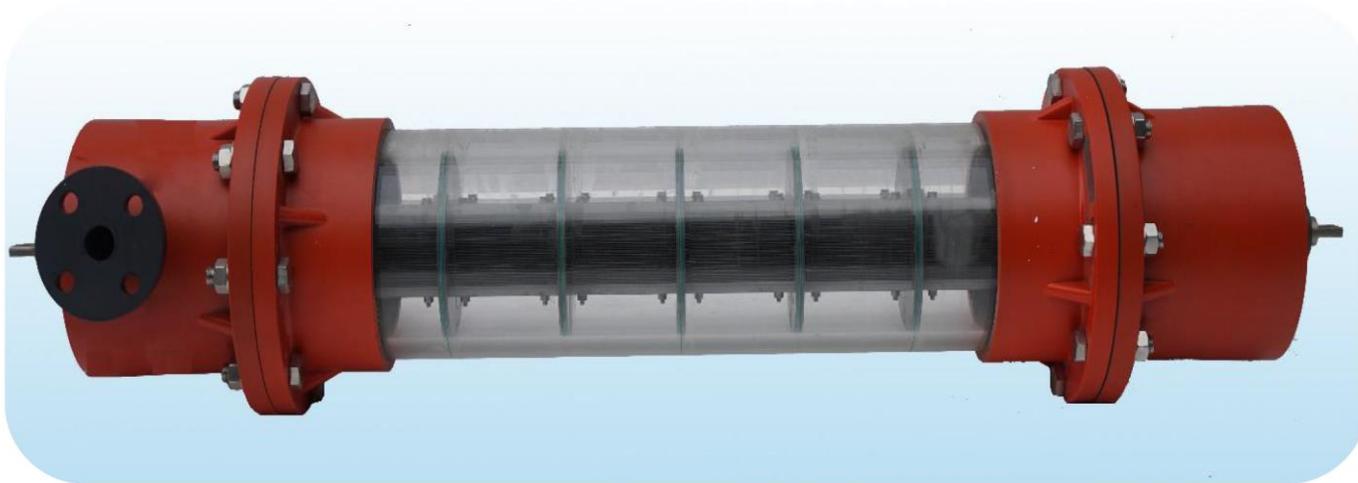
MODEL NO.	AVAILABLE CHLORINE PRODUCTION
CN-100	100g/hour
CN-200	200g/hour
CN-300	300g/hour
CN-400	400g/hour
CN-500	500g/hour
CN-500	500g/hour
CN-600	600g/hour
CN-800	800g/hour
CN-1.0K	1.0Kg/hour
CN-1.5K	1.5Kg/hour
CN-2.0K	2.0Kg/hour
CN-2.5K	2.5Kg/hour
CN-3K	3Kg/hour
CN-4K	4Kg/hour
CN-5K	5Kg/hour

MODEL NO.	AVAILABLE CHLORINE PRODUCTION
CN-6K	6Kg/hour
CN-8K	8Kg/hour
CN-10K	10Kg/hour
CN-12K	12Kg/hour
CN-15K	15Kg/hour
CN-18K	18Kg/hour
CN-20K	20Kg/hour
CN-25K	25Kg/hour
CN-30K	30Kg/hour
CN-35K	35Kg/hour
CN-40K	40Kg/hour
CN-50K	50Kg/hour
CN-60K	60Kg/hour
CN-70K	70Kg/hour
CN-80K	80Kg/hour

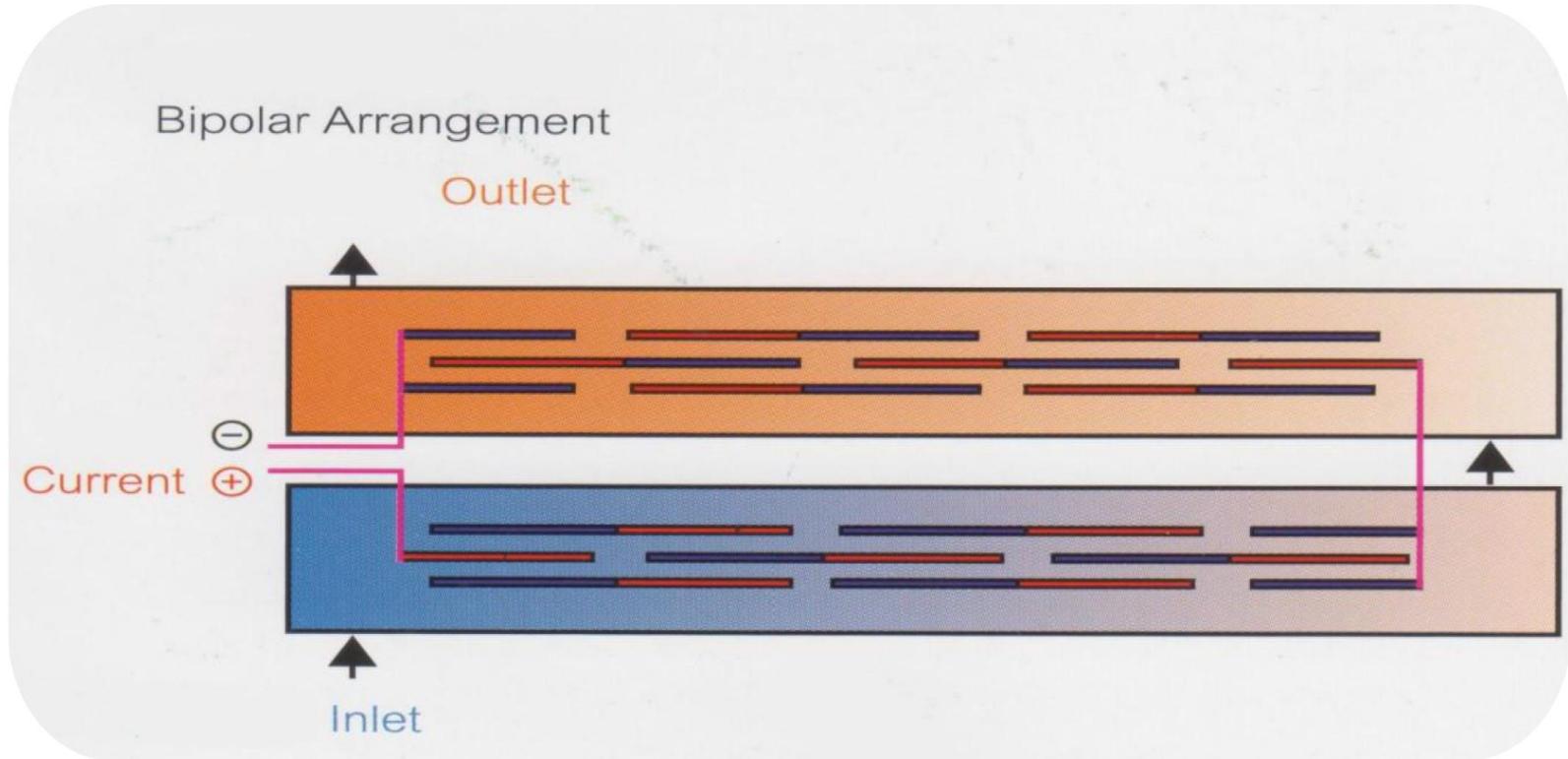
SYSTEM FLOW CHART



HIGH QUALITY ELECTRODES CELL



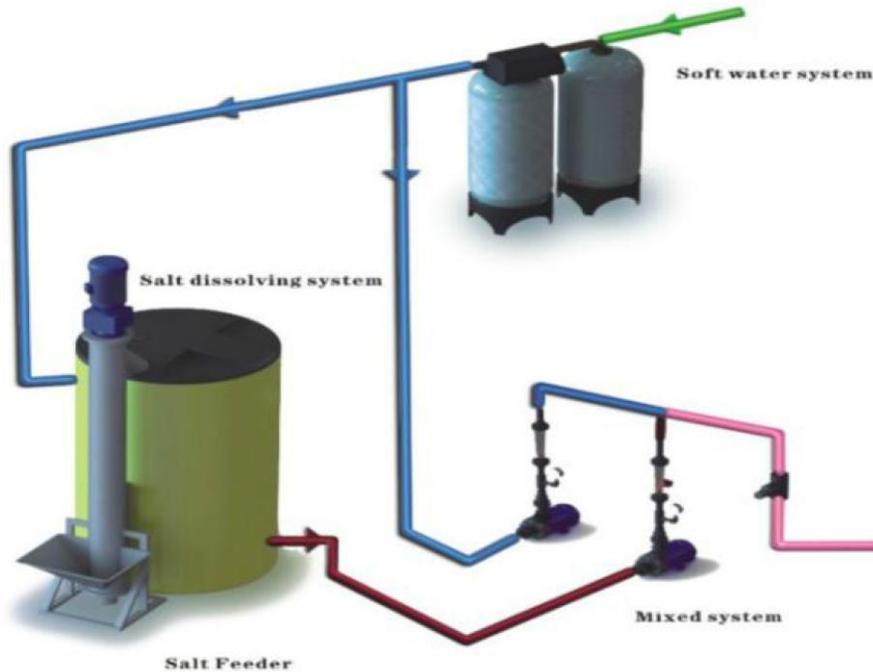
ELECTROLYSER TUBE TRANSPARENT DESIGN



ELECTROLYSER TUBE HOST MACHINE



SOFTENER, SATURATED BRINE PUMP & AUTOMATIC PICKLING SYSTEM



AUTOMATIC POWER DISTRIBUTION CONTROL SYSTEM



Simens touch screen



Simens Module



Simens PLC

POWER SUPPLY & STORAGE TANK



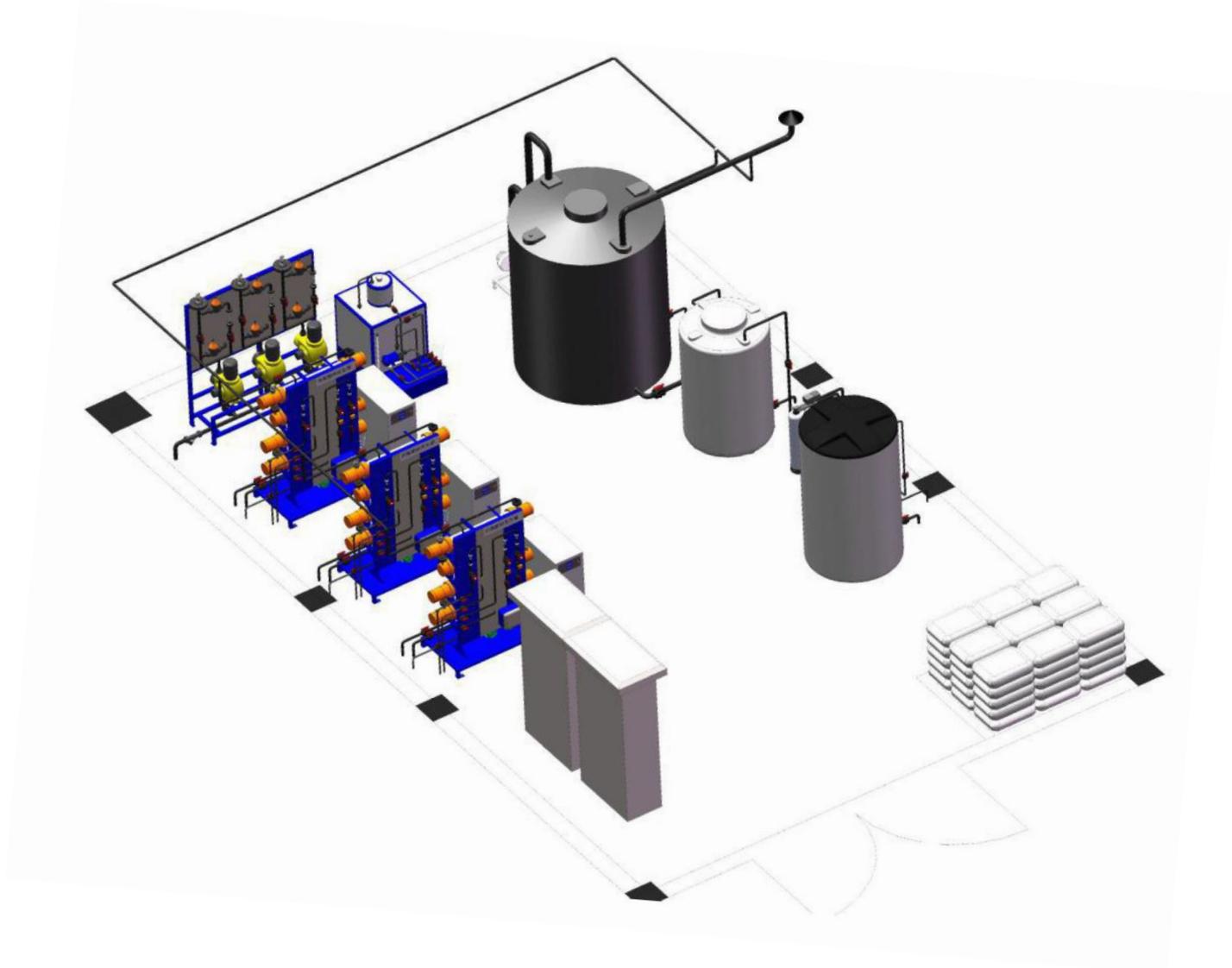
INSTALLATION



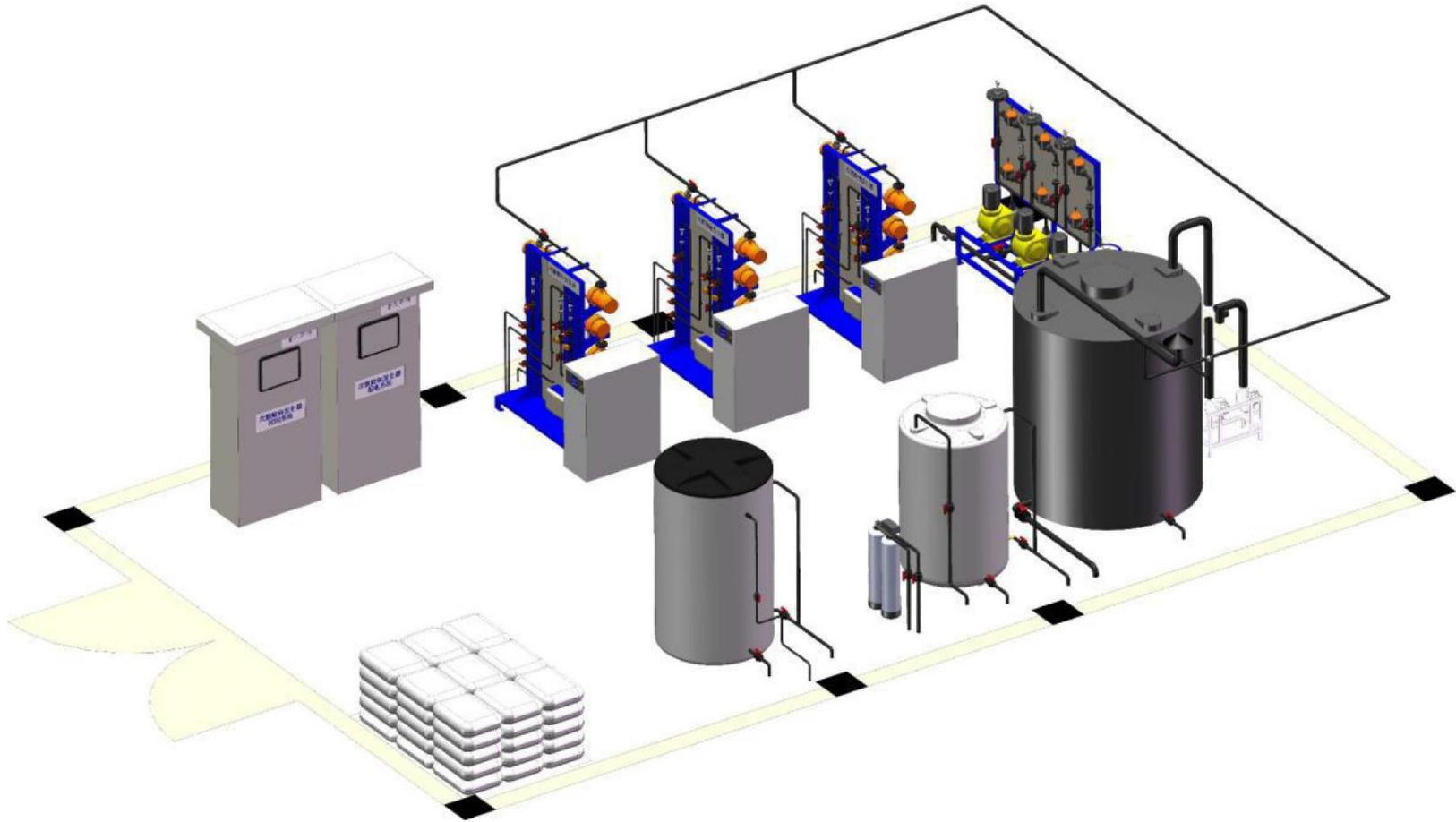
INSTALLATION



DESIGN INSTALLATION



DESIGN INSTALLATION



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