

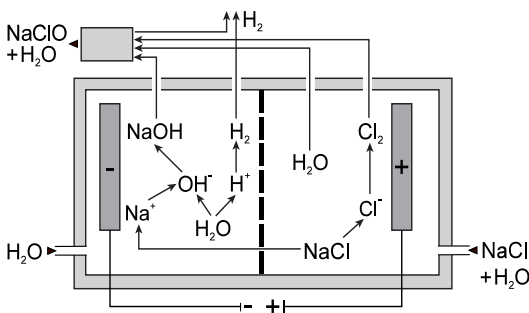
Product Information EASYMEM Membrane Cell Chlorine Electrolysis

The Right Dose of Disinfectant

The membrane cell chlorine electrolysis system EASYMEM is used for generating the disinfectant sodium hypochlorite (chlorine bleach, NaClO) directly at the place of usage. This removes the need for transportation and storage of hazardous substances like chlorine gas or chlorine bleach in containers. Sodium chloride (NaCl) salt in tablet form is used as the raw material. The system is suitable for the disinfection of swimming pool and bathing water in public and private swimming pools, of drinking water and for industrial purposes. A distinguishing feature of EASYMEM is its simple handling and long service life.

Sodium hypochlorite (chlorine bleach, NaClO)

EASYMEM works according to the method of membrane cell electrolysis. In this water (H₂O) and sodium chloride (NaCl) react in an electrolysis cell separated by a membrane to form caustic soda (NaOH), hydrogen (H₂) and chlorine (Cl₂). The caustic soda and chlorine are then mixed in a reactor connected to the membrane cells and react there to form sodium hypochlorite, water and sodium chloride.

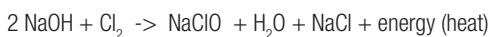


Principle of an electrolysis cell partitioned by a membrane

Step 1 in the partitioned electrolysis cell



Step 2 in the reactor



Mode of operation

The product tank's fill level control, which catches the NaClO solution produced, starts or stops all system production. On production start, water supply and pumping of the NaCl solution commence. Direct voltage is subsequently applied to the electrolysis cells. EASYMEM produces the NaClO solution at constant concentration. When the maximum fill level quantity is reached, the system stops. Only when the product is removed and the level drops in the product tank to the lowest fill quantity of NaClO solution, will system production restart.

The hydrogen that is produced during the electrolysis process is separated in the reactor by the caustic soda and thinned with a sufficient amount of air. A fan ensures sufficient additional air and pushes the air-water mixture outside above the roof through an air extractor duct that needs to be laid by the customer so it rises steadily. A flow sensor



ensures the fan works optimally at all times.

The NaClO solution is dosed directly from the product tank using subsequently connected dosing systems, which are not included in the scope of delivery for the system. We will be happy to advise you about configuration and application of suitable dosing systems.

In Short

- 2.5 ... 3 % sodium hypochlorite solution (25 ... 30 g of effective chlorine per litre)
- Plant sizes from 200 ... 6,000 g of chlorine per operating hour
- Fully-automatic system for on-site production
- Membrane cells and reactor made from high-quality materials
- No contact with hazardous substances
- Self-monitoring
- Easy handling
- Control of system via menus and touch screen
- Sturdy design
- Low maintenance requirement
- Flexible assembly options due to modular design
- NaCl salt can be freely selected depending on technical specifications (see rear page)
- Membrane cells have a service life of five years
- Fully-fledged alternative to chlorine gas or chlorine bleach containers
- No chlorine gas chamber with corresponding safety requirements

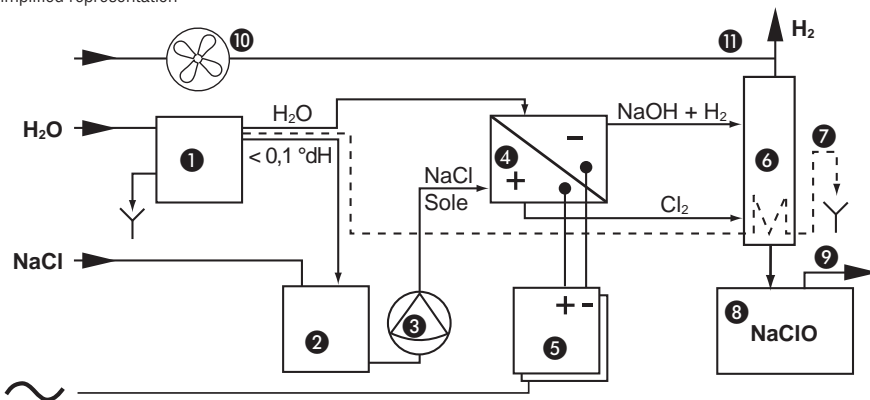
Technical data

EASYMEM		200	300	400	500	1000	1500	2000	2500	3000	4000	5000	6000
Production capacity	g Cl/h	> 200	> 300	> 400	> 500	> 1000	> 1500	> 2000	> 2500	> 3000	> 4000	> 5000	> 6000
Product concentration	g Cl/l	25 ... 30											
Salt requirement	kg/h	0.42	0.63	0.84	1.05	2.1	3.15	4.2	5.25	6.3	8.4	10.5	12.6
Water consumption ¹⁾	l/h	20	30	40	50	100	150	200	250	300	400	500	600
Salt-dissolving tank	l	100		200		400		500		750		1000	
	kg NaCl	~36		~71		~143		~179		~268		~357	
	h	~85	~56	~85	~68	~68	~56	~42	~34	~42	~32	~34	~28
Product tank	l	100	200	300	400	800	1200	1200	1500	1800	2400	3000	3600
	kg Cl	~3	~5.5	~8	~11	~22	~32	~32	~40	~48	~65	~80	~95
Operating voltage		400 V, 3 ~, 50 Hz											
Power consumption	kVA	2.4	3.2	4.2	5	10	15	20	25	30	40	50	60
Operating temperature	°C	10 ... 30 °C ²⁾											
Charging area	m ²	~5		~6		~8	~10		~12	~15	~18	~20	~26
Total weight	kg	~150	~166	~190	~218	~362	~406	~444	~489	~658	~789	~878	~1170
Order No.		61000013	61000023	61000033	61000043	61000053	61000063	61000073	61000083	61000093	61000113	61000133	61000153

h = operating hour - ¹⁾ water consumption comprises production and cooling - ²⁾ in the cooled area
 On non-cooled system parts, surface temperatures of up to 55 °C can be found.

Membrane cell chlorine electrolysis: schematic diagram

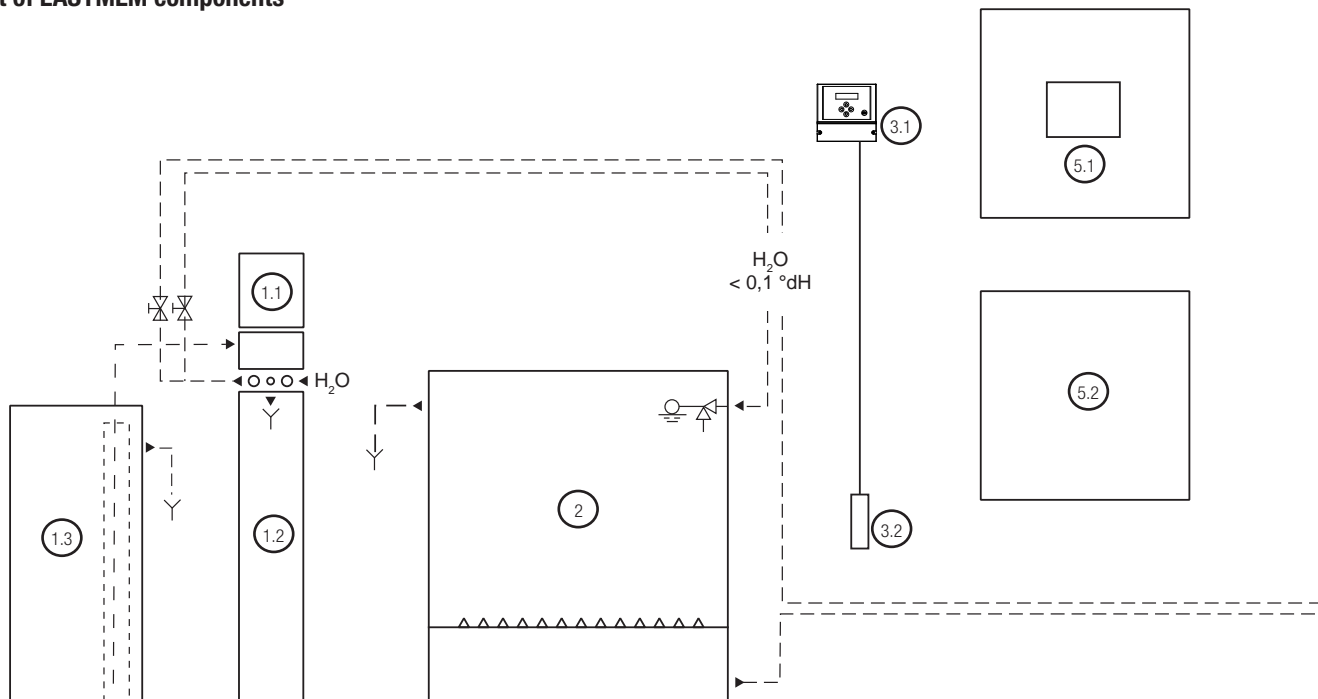
Simplified representation



Assemblies

1	Softening plant
2	Salt-dissolving tank
3	Dosing pump for NaCl solution
4	Electrolysis unit
5	Control unit/power unit
6	Reactor
7	Reactor cooling
8	Product tank
9	Downstream dosing system
10	Fan
11	Air outlet

Arrangement of EASYMEM components

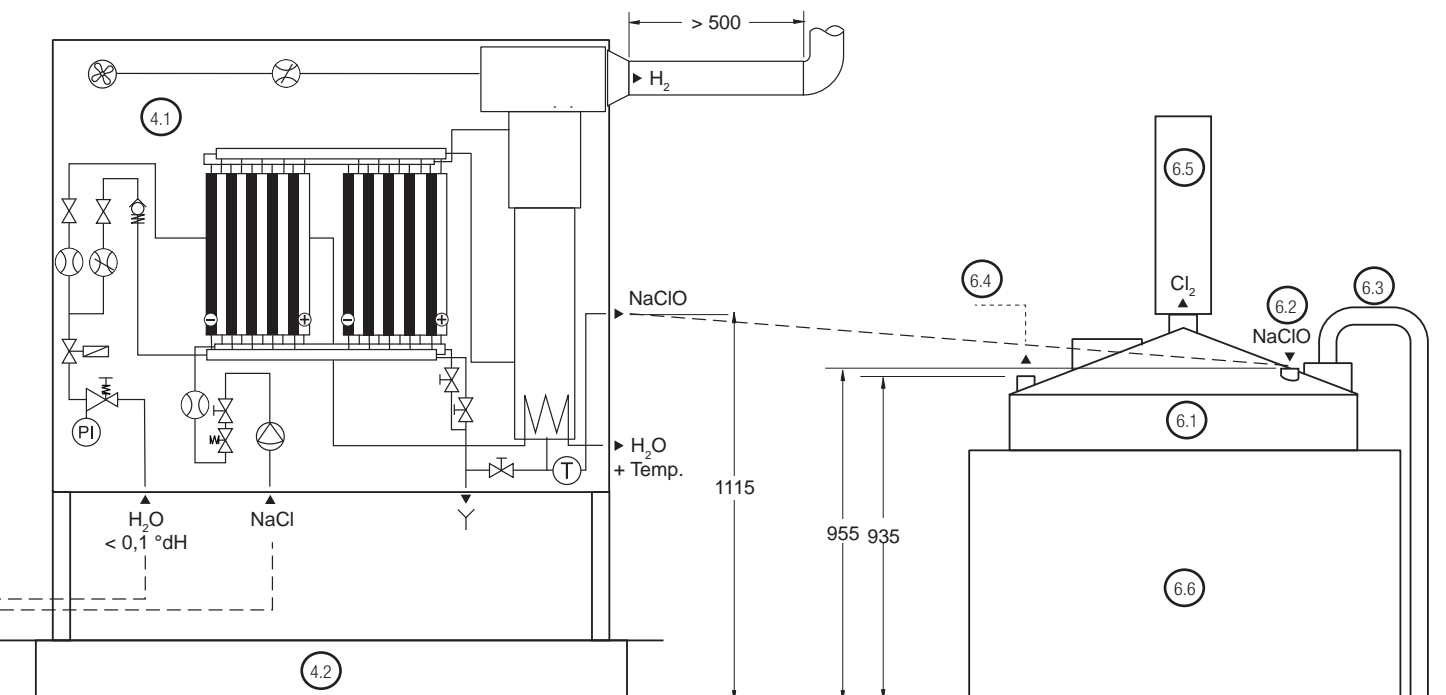


Dimensions

Item	Component	Dimensions	EASYMEM											
			200	300	400	500	1000	1500	2000	2500	3000	4000	5000	6000
Softening plant	①.1 Control unit	H x Ø	220 x Ø185						220 x Ø200					
	①.2 Ion exchange resin	H x Ø	1000 x Ø185						1500 x Ø200					
	①.3 Regeneration salt tank	W x H x D	890 x 310 x 310						1000 x 400 x 400					
Salt-dissolving tank	②	H x Ø	740 x Ø450	960 x Ø550	960 x Ø770	980 x Ø860			980 x Ø1050		1080 x Ø1150			
Gas warning device*	③.1 Gas warning device	W x H x D	165 x 160 x 100											
	③.2 Chlorine gas sensor													
Electrolysis unit	④.1 Membrane cell unit	W x H x D	1300 x 1400 x 450			1600 x 1400 x 450	2100 x 1400 x 450	2500 x 1400 x 450	3000 x 1400 x 450	3400 x 1400 x 450				
	④.2 Catch basin	W x H x D	1360 x 1900 x 510			1660 x 1900 x 510	2160 x 1900 x 510	2560 x 1900 x 510	3060 x 1900 x 510	3460 x 1900 x 510	2560 x 1260	3060 x 1260	3460 x 1260	
Control cabinets	⑤.1 Control unit	W x H x D	660 x 630 x 230						860 x 830 x 530					
	⑤.2 Power unit	W x H x D	660 x 630 x 360						1100 x 1850 x 660					
Product tank	⑥.1 Product tank	H x Ø	850 x Ø450	1030 x Ø550	1110 x Ø655	1415 x Ø825	1415 x Ø1150	1415 x Ø1400	1415 x Ø1600	1415 x Ø1750	1415 x Ø2000	1415 x Ø2250	1415 x Ø2450	
	⑥.2 Inlet													
	⑥.3 Level monitoring													
	⑥.4 Removal	H x Ø	700 x Ø500	730 x Ø655	960 x Ø770	720 x Ø1100	750 x Ø1400	760 x Ø1650	730 x Ø1850	750 x Ø1950	750 x Ø2250	730 x Ø2500	730 x Ø2800	
	⑥.5 Activated carbon filter													
	⑥.6 Catch basin													

All dimensions in mm

*) Gas warning device: not included in scope of delivery, optionally available as an accessory



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Comparison of electrolysis methods

Membrane cell chlorine electrolysis (EASYMEM)

Water and sodium chloride react in an electrolysis cell divided by a membrane to form caustic soda, hydrogen and chlorine. The caustic soda and chlorine are then mixed in a reactor and react there to form sodium hypochlorite, water and sodium chloride. The system produces the sodium hypochlorite outside of the water circuit in a product tank.

Pipe cell chlorine electrolysis

Water and sodium chloride react in an unpartitioned electrolysis cell to form caustic soda, hydrogen and chlorine. The caustic soda and chlorine react again in the electrolysis cell to form sodium hypochlorite. The system produces the sodium hypochlorite outside of the water circuit in a product tank. Concentration of the sodium hypochlorite is lower compared to with membrane cell chlorine electrolysis. At the same time, the percentage of sodium chloride in the product is significantly higher.

Flow-electrolytic chlorination for swimming pools (Electrolytical chlorination in an inline operation)

The flow of electrolytical chlorination represents a special case of the tube cell. The system is directly integrated in the pool circulation. The pool water must contain an appropriate salt content. Lutz-Jesco offers Technopool Systems according to the SALT-WATER-LIGHT method.

Comparison of electrolysis methods	Con-nection	NaClO concentration	Resid-ual salt content	Salt require-ments	Dosing technology required
Membrane cell (EASYMEM)	Via product tank	high	low	high	Yes
Pipe cell		medium	medium	medium	Yes
Flow-through (Technopool)	In circuit	medium	high	medium	No

Salt requirements

The salt should be added in tablet form (granules can be processed on request). The type of salt can be selected according to the technical specifications:

Salt components	Upper limits	
NaCl	> 99,9 %	< 999 g/kg
Sulfate	< 0,04 %	< 400 mg/kg
Ca	< 0,001 %	< 10 mg/kg
Br	< 0,005 %	< 50 mg/kg
Mg	< 0,001 %	< 10 mg/kg
Mn	< 0,000003 %	< 0.03 mg/kg
Fe	< 0,00005 %	< 0.5 mg/kg
Unsoluble components	≤ 0,005 %	≤ 50 mg/kg

Recommendation: Type Marina Plus, Solvay, Esco, Kali+Salt

Infrastructure requirements

Area	Requirement
Water	Drinking water quality
Waste water	Floor drain
Ventilation	150 m ³ /h of inlet and outlet air
Charging area	See Technical Data table
Power supply	

Scope of delivery

- Softening plant
 - Ion exchange resin (canister) with control
 - Regeneration salt tank
- Salt-dissolving tank with cover
- Control unit and power unit (2-part)
- Electrolysis unit (piped and wired at factory)
 - Electrolysis cells with distributor system and drainage
 - Dosing pump for saltwater dosing
 - Reactor
 - Ventilator with flow monitor
- Product tank
 - Activated carbon filter
 - Collecting pan for product tank
- Collecting pan for electrolysis unit (optional)
- Gas warning device with chlorine gas sensor (optional)

Accessories

In addition to the production system itself, the following accessories are available for operation and installation:

Description	Model	Order No.
Suction line SC, DN6, PVC/DYTEX, 950 mm, hose clamp connect for hose 6/12 (Øi/a)	for EASYMEM 200 ... 2500	12200691
Priming aid ASH 250, PVC, 250 ml, 2x hose clamp connection for hose 6/12 (Øi/a)		13300009
Suction line SH, DN15, Ø20 PVC/FPM/DYTEX, 1400 mm	for EASYMEM 3000 ... 6000	12200236
Siphon container, PVC, 3000 ml, DN25, Ø32		13333386
Salt in tablet form, 25 kg bag		91810000
Test set (total hardness, active chlorine)		39529

We will be happy to advise you about selection of other accessories for integration in the system (e.g. contact water meter, measuring and control systems, additional extractor pumps).