Electrolysis System CHLORINSITU® V Plus

Chlorine and sodium hydroxide made from common salt. Directly on site.

Output 100 – 3,500 g/h of chlorine

Electrolysis systems of type CHLORINSITU® V Plus generate ultra-pure chlorine gas combined with a sodium hypochlorite solution in a vacuum process. A saturated solution of sodium chloride is produced in a salt-dissolving tank, included in the scope of delivery, and this solution is then electrolysed in a diaphragm cell. Chloride-free sodium hydroxide solution and hydrogen are produced in the cathode chamber, while ultra-pure chlorine gas and residual brine are produced in the anode chamber, separated by a diaphragm from the cathode chamber. The resulting ultra-pure chlorine gas is further processed in two ways. Firstly, it is suctioned off through an injector (included in the scope of delivery) and fully dissolved as hypochlorous acid in the water being treated (through a bypass). The superchlorinated water is then distributed throughout the various pools via one or more proportionately controllable motor driven ball valves. The vacuum is kept stable by a single frequency-controlled booster pump. This permits significant savings in terms of energy. If the complete production output is not needed, excess chlorine gas can be combined with the sodium hydroxide solution produced and then temporarily stored as sodium hypochlorite (PLUS system). The system thus does not have to be sized based on the maximum chlorine gas demand rather on the average daily demand. Peaks in demand are met by the additional metering of sodium hypochlorite from the temporary reservoir, which, as with hypochlorous acid, is fed through a central injector system.

The chloride-free sodium hydroxide solution is stored temporarily and can be used for pH value correction. First the base pH (pH 6.8 – 7) of the superchlorinated water is corrected by a standard diaphragm metering pump or through the addition of sodium hypochlorite. The fine correction of the pH value is provided via additional alkali metering pumps for each circuit or point of injection. They are connected directly to the system's control through an external pH value controller. The hydrogen produced is seriously diluted with fresh air by a fan and discharged safely. The residual brine is fully discarded. To achieve this, the residual brine is strongly diluted with softened water, neutralised by the addition of sodium hydroxide solution and disposed of in the sewer. Any residual chloride and chlorate is thereby disposed of and not mixed with the process water. Electrolysis systems of type CHLORINSITU® V Plus can therefore be compared with pure chlorine gas in terms of their oxidation strength and chloride / chlorate content in the process water. The salt-dissolving water comes from a softener integrated in the system, preventing the formation of lime deposits and ensuring the long service life of the diaphragm cell. The efficiency of the electrolysis is constantly monitored by various flow meters, the addition of water depending on the sodium hydroxide solution production and the base pH correction.

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Technical Data

Your benefits

- Chlorination and pH adjustment with a single system
- Exceedingly low chloride and chlorate content
- Reservoir of sodium hypochlorite solution to cover peak demand
- Production and metering of high-purity hypochlorous acid combined with sodium hypochlorite production
- Excellent service life of the membrane cells, thanks to a constant vacuum
- Maximum operating safety due to their design as negative pressure systems

Field of application

- Potable water
- Process water
- Swimming pool water
- Cooling tower

Power supply 3 x 400 V (VAC/3P/N/PE/50 Hz)

Type/ output	Fuse	Power uptake	Max. salt consumption	Max. consumption of process water*	(External) consumption of cooling water	Dimensions L x W x H (mm)	Brine tank	Recommended capacity storage tank
g/h	A	kW	kg/d	l/h	l/h		l	l
100	3 x 16	1.10	5	60	–	1,655 x 600 x 1,550	210	50
200	3 x 16	1.50	10	60	–	1,655 x 600 x 1,550	210	100
300	3 x 16	1.90	15	60	–	1,655 x 600 x 1,550	210	150
400	3 x 16	2.30	20	60	–	1,655 x 600 x 1,550	210	200
500	3 x 16	2.70	25	60	–	1,655 x 600 x 2,000	210	250
600	3 x 20	3.10	30	90	–	1,950 x 600 x 2,000	400	300
750	3 x 25	3.70	40	90	–	1,950 x 600 x 2,000	400	400
1,000	3 x 25	4.70	55	90	–	1,950 x 600 x 2,000	400	500
1,250	3 x 35	5.70	60	90	–	1,950 x 600 x 2,000	400	600
1,500	3 x 35	6.70	75	90	–	1,950 x 600 x 2,000	400	750
1,750	3 x 35	7.70	85	90	–	1,950 x 600 x 2,000	400	850
2,000	3 x 50	8.70	100	175	200	1,750 x 1,200 x 2,000	520	1,000
2,500	3 x 63	10.70	125	175	250	1,750 x 1,200 x 2,000	520	1,250
3,000	3 x 63	12.70	150	175	300	1,750 x 1,200 x 2,000	520	1,500
3,500	3 x 80	14.70	175	175	350	1,750 x 1,200 x 2,000	520	1,750

* **The consumption of process water depends on the ratio of chlorine gas to stock production. The value is given here for a ratio of 70% : 30 %.**

Capacities > 3,500 g/h upon request

Scope of delivery:

Electrolysis systems of type CHLORINSITU® V Plus are ready mounted, wired for use, on a powder-coated stainless steel frame with a Programmable Logic Controller (PLC) in the control cabinet, Remote Control Engineer for remote diagnosis and troubleshooting, integral water softening unit, diaphragm electrolysis cells, hydrogen bleed system and separate salt dissolving tank with level monitoring. The scope of delivery also includes a frequency-controlled central injector system matched to the system to meter active chlorine and sodium hydroxide solution for pH correction and a single booster pump. A level control to monitor the storage tank to be provided on site for sodium hypochlorite. A chlorine gas detector and automatic monitoring of water hardness downstream of the softening system come as standard with systems producing more than 600 g/h.

Note:

Electrolysis systems of type CHLORINSITU® II, III, V and V Plus are offered and planned to meet customer specifications. This is true both for the system documentation and the subsequent supply of spare parts and maintenance.

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