YORA Solutions FZCO
Dubai, United Arab Emirates

PRODUCT DATASHEET

On-Site Sodium Hypochlorite Generation

Brine electrolysis | 0.6-0.8% NaClO | 100 to 15,000 g/h equivalent chlorine

DATASHEET NO.

DS-YS-HYPO-R03

ENGINEERING BASIS

0.6-0.8%

PRODUCT CONCENTRATION

Low-strength sodium hypochlorite solution generated and stored at the point of use.

100-15,000

EQUIVALENT CHLORINE OUTPUT

Published package range in g/h; parallel trains and redundancy follow the duty.

4 kWh/kg

DC CELL ENERGY BASIS

Typical published basis for 100-7,000 g/h models; the selected larger cell and auxiliary AC loads are confirmed separately.

3.5 kg/kg

SALT CONSUMPTION BASIS

Published food-grade salt consumption per kilogram of equivalent chlorine.

Illustrative on-site generation package: twin generator skids, interconnecting piping and sodium hypochlorite storage tank.

PRODUCT OVERVIEW

The system generates low-strength sodium hypochlorite solution at the point of use from softened water, food-grade non-iodized salt and electricity. Dilute brine is conditioned and passed through a DC-powered electrolyzer; the resulting 0.6-0.8% NaClO solution is stored and metered to the disinfection point. On-site production reduces dependence on delivered chlorine chemicals while providing repeatable output for drinking water, municipal wastewater and industrial disinfection.

Consumption and service-life values are indicative design figures. Final guarantees depend on selected capacity, salt purity, feed-water hardness, temperature, operating current density and maintenance regime.

PRODUCT DATASHEET

Process Principle & System Schematic

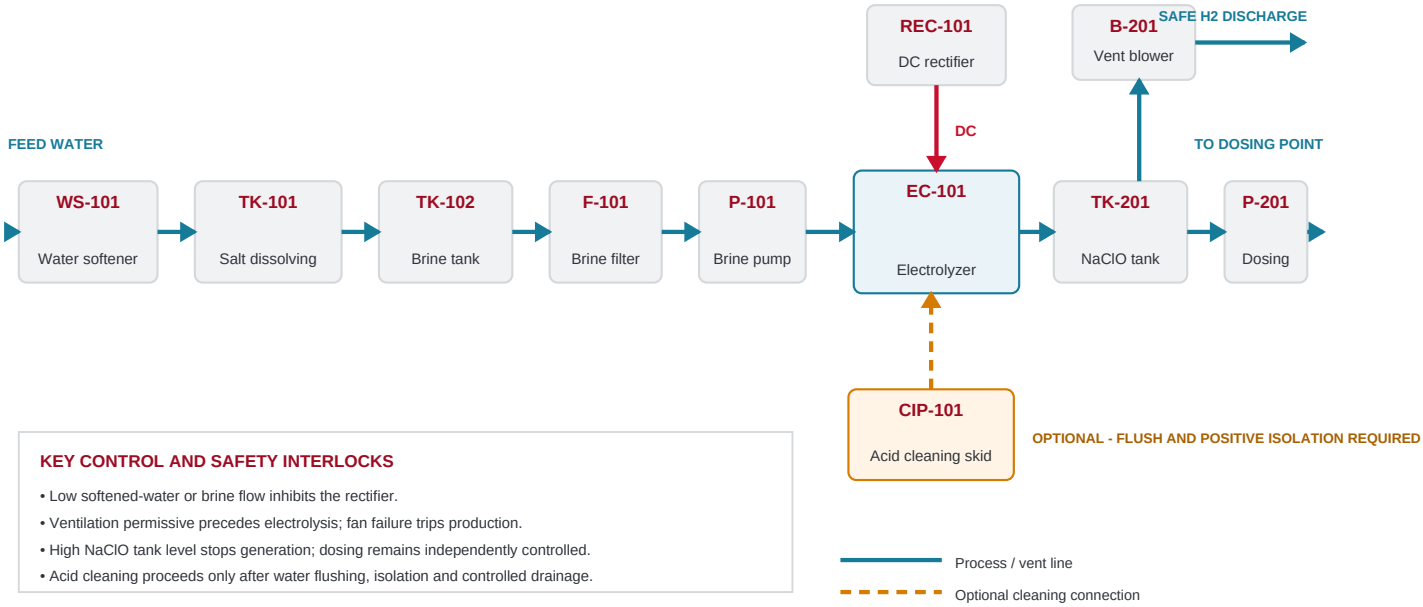
Safe on-site production from salt, water and electricity

PROCESS PRINCIPLE

Direct current passes through conditioned brine. Chloride is oxidized at the anode, water is reduced at the cathode, and hypochlorous species form in solution. Hydrogen is separated and safely diluted / vented.

NaCl + H2O --> NaClO + H2

SIMPLIFIED PROCESS AND CONTROL SCHEMATIC



KEY CONTROL AND SAFETY INTERLOCKS

- Low softened-water or brine flow inhibits the rectifier.
- Ventilation permissive precedes electrolysis; fan failure trips production.
- High NaClO tank level stops generation; dosing remains independently controlled.
- Acid cleaning proceeds only after water flushing, isolation and controlled drainage.

Engineering schematic for package definition; final P&ID;, instrument tags, valve arrangement, vent routing and cause-and-effect follow the approved project design.

CONTROL AND SAFETY FUNCTIONS

AUTOMATION	PROCESS SAFETY
› PLC/HMI sequencing and output control	› Hydrogen dilution and forced ventilation
› Low-flow, low-level and electrical protection	› Ventilation-proven permissive before electrolysis
› Duty / standby operation for multi-cell systems	› Controlled water flushing and positive isolation before acid cleaning
› Remote alarm and SCADA interface option	› Emergency stop and safe shutdown logic

Acid cleaning is permitted only under an approved procedure after water flushing and positive isolation from sodium hypochlorite. Acid and hypochlorite must never be mixed. Drainage, ventilation and neutralization are confirmed for the project.

PRODUCT DATASHEET

Capacity, Materials & Scope

Standard output selections with project-specific configuration

INDICATIVE OUTPUT RANGE

EQUIVALENT CHLORINE g/h	NaClO SOLUTION kg/h*	SALT kg/h	DC CELL LOAD kW	APPROX. L x W x H mm
100	16.5	0.35	0.4	1500 x 1000 x 1500
500	82.5	1.75	2.0	2000 x 1500 x 1500
1,000	165	3.5	4.0	2500 x 1500 x 2000
2,000	330	7.0	8.0	3500 x 1500 x 2000
5,000	825	17.5	20	6000 x 2200 x 2200
7,000	1,155	24.5	28	6000 x 2200 x 2200
Up to 15,000	Project-specific	Project-specific	Project-specific	Engineered arrangement

* Solution mass flow is based on the listed product-concentration basis. Standard figures are preliminary selection data. Additional output sizes, redundant trains and containerized arrangements are available on request.

TYPICAL MATERIALS OF CONSTRUCTION

COMPONENT	TYPICAL MATERIAL / CONFIGURATION
Electrolyzer electrode	Titanium substrate with MMO catalytic coating; thickness confirmed for the selected cell
Cell housing	Corrosion-resistant engineered polymer construction selected for temperature and chloride duty
Brine / product tanks	HDPE or FRP; volume and bunding to project requirement
Process piping	uPVC, CPVC or PVDF according to concentration, pressure and temperature
Dosing equipment	Chemical-duty metering pumps with compatible PVC / PVDF wetted parts
Skid / supports	Epoxy-coated carbon steel; stainless-steel option for aggressive environments
Ventilation ducting	Corrosion-resistant non-metallic construction with safe outdoor discharge

STANDARD SUPPLY SCOPE	EXTRA OPTIONS
› Salt dissolving and brine-conditioning package	› Duty / standby cells and dosing pumps
› Precision filtration and electrolyzer cell assembly	› Containerized or indoor packaged installation
› DC rectifier, local PLC/HMI and instruments	› Water softener, chiller and controlled acid-cleaning skid
› NaClO storage and metering system within agreed boundary	› Online chlorine analyzer and closed-loop dosing
› Hydrogen separation / ventilation equipment	› SCADA, remote monitoring, bund, flood detection and gas detection where required

APPLICATIONS

DRINKING WATER › MUNICIPAL WW › FOOD PROCESS › OILFIELD WATER › HOSPITALS › COOLING WATER

Final system design is based on required chlorine dose, peak water flow, operating philosophy, salt purity, feed-water quality, ambient conditions, redundancy and local safety requirements. For potable duty, feedstock/contact-material approval, product storage turnover and bromate/chlorate/perchlorate control are confirmed against the governing client and authority requirements. Non-standard additions are offered as Extra Options.