

EASYCHLORGEN T 250 – 2000

In-situ sodium hypochlorite generator



Operating Instructions

BA-65005 V04 EN 05/24

This page is left intentionally blank

Table of Contents

1	Notes for the Operator	1
1.1	Document Guidance.....	1
1.2	Personnel Qualification.....	1
1.3	Operators Responsibility.....	1
1.4	Training Course Assistance.....	1
1.5	Notes on Warranty	1
1.6	Software Version	1
2	Safety.....	2
2.1	Safety Conventions	2
2.2	Hazards Due to Misuse	2
2.3	Working in a Safety-conscious Manner.....	2
2.4	Personal Protective Equipment.....	2
2.5	Sodium Hypochlorite Safety Note	3
2.6	Hydrogen Safety Note	3
3	Transport & Storage	4
3.1	Delivery Damages	4
3.2	Transport & Storage Conditions.....	4
4	Description.....	5
4.1	Models	5
4.2	Scope of Delivery	5
4.3	Rating Plate.....	5
4.4	Intended Use.....	5
4.5	EASYCHLORGEN T Design and Function	6
4.6	Adaptive Response Technology	7
4.7	System Process Flow	8
5	Technical Data	9
5.1	Data Table 250 / 500 / 1000 / 2000.....	9
5.2	Salt Specification.....	10
6	Installation.....	11
6.1	Location	11
6.2	Softened Water Supply.....	11
6.3	Softener Regeneration Switch	11
6.4	Saturated Brine Supply.....	11
6.5	Product Storage Tank.....	11
6.6	Level Switch	11
6.7	Hydrogen Ventilation	12
6.8	Hydrogen Detector	12
6.9	Air Blower Enclosure Duct.....	12
6.10	Dimensions	13
6.11	Electrical.....	17
7	Commissioning.....	20
7.1	Pre-Startup Checks	20
7.2	Commissioning Checklist.....	20
7.3	Commissioning Log	21
8	Operation.....	22
8.1	Controller HMI	22
8.2	Controller Functions & Settings	23
8.3	Controller Communication	24
8.4	Emergency Shutdown	24
8.5	Hydrogen Detector	24
9	Shutdown & Emptying.....	25
9.1	System Flush	25
9.2	System Drain.....	25
9.3	Neutralising	25
9.4	Shutdown	25
9.5	Disposal of Old Equipment	25
10	Troubleshooting	26
10.1	System Warning.....	26
10.2	System Fault	26
10.3	Fault Messages.....	27
10.4	System Messages	28
11	Maintenance.....	29
11.1	Maintenance Checks for Users.....	29
11.2	Maintenance for Authorised Personnel	29
11.3	Maintenance & Spares	30
11.4	Electrolytic Cell Acid Cleaning	32
12	Operation Log	34
13	EC Declaration of Conformity	35

1 Notes for the Operator

1.1 Document Guidance

These instructions assist in the safe and correct operation of the EASYCHLORGEN T systems by providing guidance in the following areas:

- Installation & commissioning
- Operation
- Maintenances
- Shutdown procedures
- Transportation
- Potential risks due to matters outside of the manufacturer's control.

1.2 Personnel Qualification

All personnel are obligated to read this manual and receive relevant training before operating or performing work on the equipment.

Operator:

- The company responsible for organizing the installation, commissioning, or servicing of the equipment.

Authorised Service Personnel:

- Only authorised service personnel trained by the operator or Lutz-Jesco can carry out installation, commissioning, and servicing of the equipment.
- Skilled people with relevant qualifications and experience for the task.

Users:

- Responsible for basic operation and upkeep of the equipment, they must be trained to carry out their tasks by authorised service personnel.
- Responsible for regularly completing the 'Operation Log'.
- Non-skilled persons.

1.3 Operators Responsibility

Ensuring that:

- These instructions are easily accessible and in close proximity to the system at all times.
- The user is supplied with instructions on safe use of sodium hypochlorite and associated reagents.
- The installation room satisfies all local regulations including fire, safety, and accident prevention laws.
- No alterations to the system and installation that are not detailed in these instructions are made.
- Users are instructed in operation and basic maintenance of the system.
- The system is serviced at regular intervals by authorised personnel.
- Personal protective equipment is available for all users of the system.

1.4 Training Course Assistance

As an operator you are obligated to provide training to all personnel to prevent hazards and misuse of equipment from occurring.

1.5 Notes on Warranty

The warranty period begins at the date of the invoice.

For a warranty claim to be valid the following requirements must be fulfilled:

- The system must be installed and operated in accordance with the information provided within these instructions.
- Maintenance and repairs must be carried out by authorised service personnel at the intervals stated.
- Replacement parts and maintenance kits are only to be supplied by Lutz-Jesco GmbH or authorised distributors and operators.
- The water supply, environmental conditions and salt used must meet the specifications detailed in these instructions.
- Users must regularly fill in the 'Operation Log'.
- Alarm logs and history must be made available for Lutz-Jesco to view.

Equipment	Warranty Period (Years)
Wearable items	1
Electrical	2
Electrodes	5 (pro-rata)

1.6 Software Version

This document is relevant for software versions 18-10-23 and later.

2 Safety

The following information is intended to help eliminate hazards. Risk prevention measures always apply regardless of any specific action.

Take note of the signal word and hazard symbols at the start of the sections in these instructions.

2.1 Safety Conventions

2.1.1 Signal Words

DANGER!

Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Potential risk of damage to the system.

2.1.2 Symbols



General warning



Electrical hazard



Mandatory action



Disconnect before performing work

2.1.3 Structure of Warning Messages

SIGNAL WORD



Potential hazard

Consequence of not avoiding hazard.

- How to avoid hazard.

2.2 Hazards Due to Misuse

The EASYCHLORGEN T must only be used in the ways detailed in these instructions. Alterations and modifications of any kind that are not described in these instructions are forbidden.

Lutz-Jesco GmbH accepts no liability for any damage or harm caused by misuse of the equipment.

2.3 Working in a Safety-conscious Manner

Failure to follow the safety instructions leads to:

- Failure of important functions of the device and of the corresponding system.
- Failure of required maintenance and repair methods.
- Danger to personnel.
- Danger to the environment.

Safety rules and regulations not specified in this manual, which must be adhered to:

- Accident prevention regulations.
- Safety and operating provisions.
- Environmental protection provisions.
- Applicable standards and legislation.

2.4 Personal Protective Equipment

Personal protective equipment in accordance with national safety regulations should be used by all users and personnel when carrying out tasks described in this manual.

Recommended Protective Equipment:



Protective clothing:
Chemical safety overalls/PVC apron



Protective gloves:
PVC/Nitrile disposable gloves



Eye protection:
Safety goggles

2.5 Sodium Hypochlorite Safety Note

WARNING

**Hazardous Substances**

Death or serious injury

- Read latest SDS sheet before handling substances.

It is the operator's responsibility to supply the user with instructions and training on safe use of sodium hypochlorite.

SDS available upon request.

Sodium Hypochlorite (NaClO, aq. solution):

- Max. concentration = 6 g/l Cl₂.
- Never mix sodium hypochlorite with acid or other products to prevent release of chlorine gas.

2.6 Hydrogen Safety Note

WARNING

**Potential for explosive atmosphere**

Death or serious injury

- Install equipment and vent line in accordance with local regulations and guidance from section 6 of this instruction manual.

The EASYCHLORGEN T generates a small amount of hydrogen which is diluted by its air blower below <1% of the LEL and should be safely discharged to the outside atmosphere by an independent vent line. See section 6 for installation guidance.

3 Transport & Storage

CAUTION

**Heavy object**

Strain or injury to personnel.

- Use a forklift or pallet truck to move the EASYCHLORGEN T into position.
- Wear appropriate PPE.



NOTICE

**Heavy object**

Risk of damage to the system

- Use a pallet truck to move the EASYCHLORGEN T into position.
- Protect with suitable packaging during transport & installation.

Dimensions and weight of systems are described in section 5.

3.1 Delivery Damages

If your package has incurred damage due to improper transportation and handling, inform your operator and follow the returns procedure if necessary.

3.2 Transport & Storage Conditions

- Location must meet the environmental requirements described in section 5.
- The system should be protected via packaging where possible to reduce potential damage.
- The system must be empty of all residual chemical solutions.
- Suitable lifting and transport equipment must be used.
- If the system has been in use, it must be shut down in accordance with section 9.

4 Description

4.1 Models

The EASYCHLORGEN T is available in 4 different output capacities. The models represent the maximum generated gram of available Cl_2 per hour.

Models	Power Supply
EASYCHLORGEN T 250	230 V~ 50–60 Hz
EASYCHLORGEN T 250	110 V~ 50–60 Hz
EASYCHLORGEN T 500	230 V~ 50–60 Hz
EASYCHLORGEN T 500	110 V~ 50–60 Hz
EASYCHLORGEN T 1000	230 V~ / 400 V 3N~ 50–60 Hz
EASYCHLORGEN T 1000	208 V 3N~ 50–60 Hz
EASYCHLORGEN T 2000	400 V 3N~ 50–60 Hz
EASYCHLORGEN T 2000	208 V 3N~ 50–60 Hz

4.2 Scope of Delivery

- EASYCHLORGEN T
- Operating instructions
- Hydrogen detector
- Dual float level switch
- Metric/Imperial adapters for inlet/outlet connections

4.2.1 Available Accessories

- Modbus RTU Module (RS-485)
- Secondary hydrogen detector
- Secondary hydrogen detector cable
- Brine break tank
- Product tank
- Salt saturator kit small/medium/large

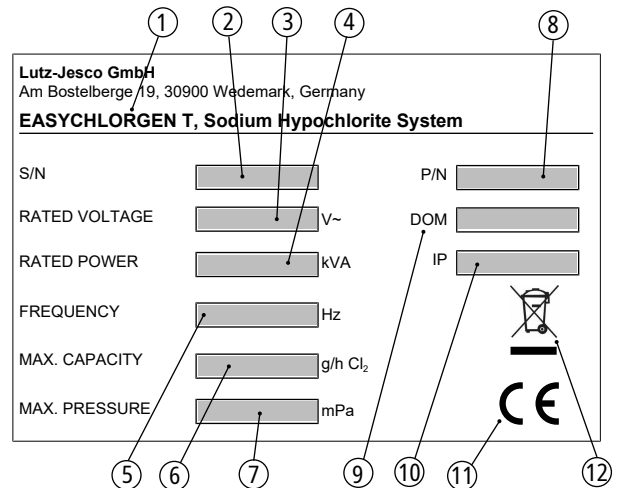
4.2.2 Required Accessories

The following accessories are required for the installation but not supplied as standard by Lutz-Jesco GmbH:

- Product storage tank
- Dosing equipment and ancillaries
- Salt saturator tank
- Water softener
- Associated plumbing & pipework fittings

4.3 Rating Plate

The rating plate clearly identifies the product and provides important information such as the manufacturer, product designation, year of manufacture and technical and safety-relevant data. The rating plate must be kept legible for the duration of the service life of the product.



Tag	Description
1	Product designation
2	Serial number
3	Rated voltage
4	Rated power
5	Frequency
6	Max. capacity
7	Max. pressure
8	Part number
9	Production date
10	Protection class
11	Label showing conformity with applicable European directives
12	WEEE label

4.4 Intended Use

The EASYCHLORGEN T is intended for the following purpose: Automatic generation of a sodium hypochlorite solution containing 0.6%wt Cl_2 , using sodium chloride, electrical energy, and softened water. The resulting solution can be used as a disinfection agent for a wide range of applications.

4.5 EASYCHLORGEN T Design and Function

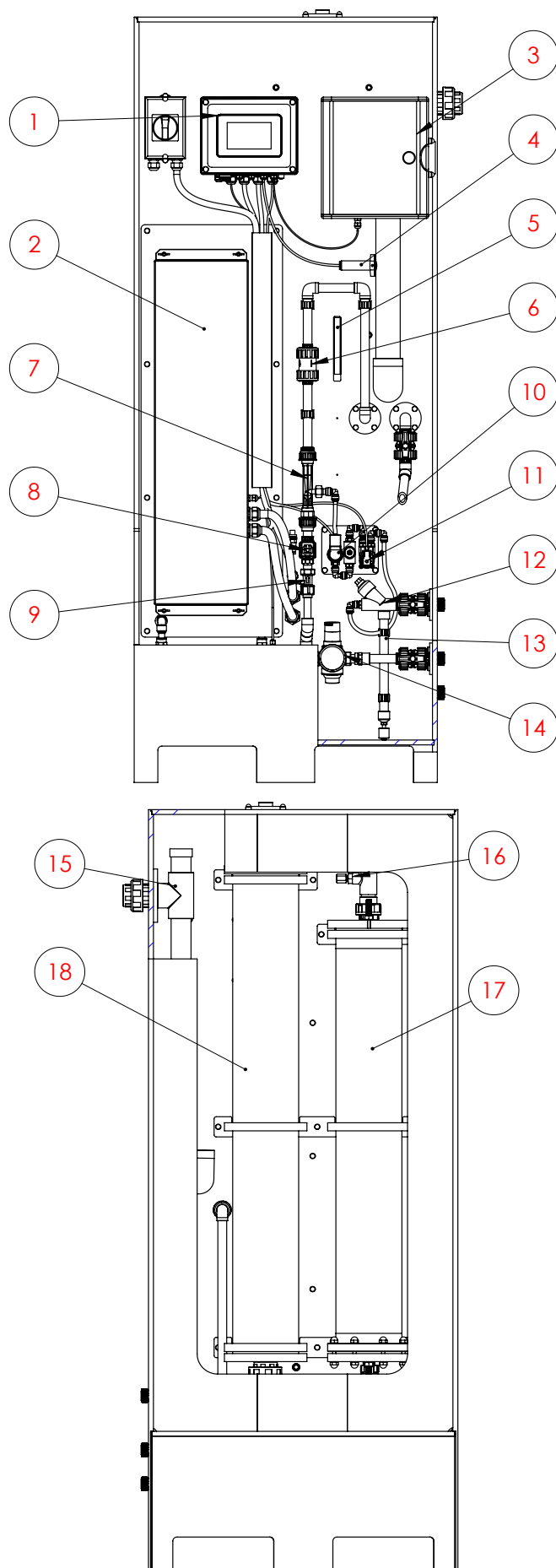
In normal operation a batch process sequence commences: the water [8] and brine [10] solenoid valves are energised simultaneously, allowing softened water to flow through the brine eductor [7] to create a vacuum, which draws in a set amount of brine from a salt saturator.

Once the predetermined quantity of brine is drawn, measured by the flow meter [11], the brine solenoid valve closes. The water valve stays open until the correct volume of water determined by the water flow meter [9] is delivered to the electrolyser [17]. The resultant diluted brine solution passes through the electrolyser where a DC current is applied to generate a sodium hypochlorite solution.

As a result of the batching process, generated product is displaced from the electrolytic cell, into a degassing column [18] where hydrogen liberated by the electrolytic process is force ventilated by the air blower [3] to an external termination point. The generated product exits the system from the product outlet connection [15] to be transferred by gravity to an external storage tank.

The batch process continues until the product storage tank level control or external process control stops generation. When product is removed from the storage tank by the process demand the batch cycle will automatically restart after a predetermined software delay time. Generation can be restarted at any time using the on/off switch on the HMI or by manually overriding the delay time.

Tag	Description
1	Touch display
2	Water-cooled power supply unit (PSU)
3	Air blower
4	Air flow sensor
5	LED status indicator
6	Non-return valve (water)
7	Brine eductor
8	Solenoid valve (water)
9	Water flow meter
10	Solenoid valve (brine)
11	Flow meter (brine)
12	Y-strainer
13	Float switch
14	Pressure-reducing valve
15	Product outlet level switch
16	Product temperature sensor
17	Electrolytic cell
18	H ₂ degassing column



4.6 Adaptive Response Technology

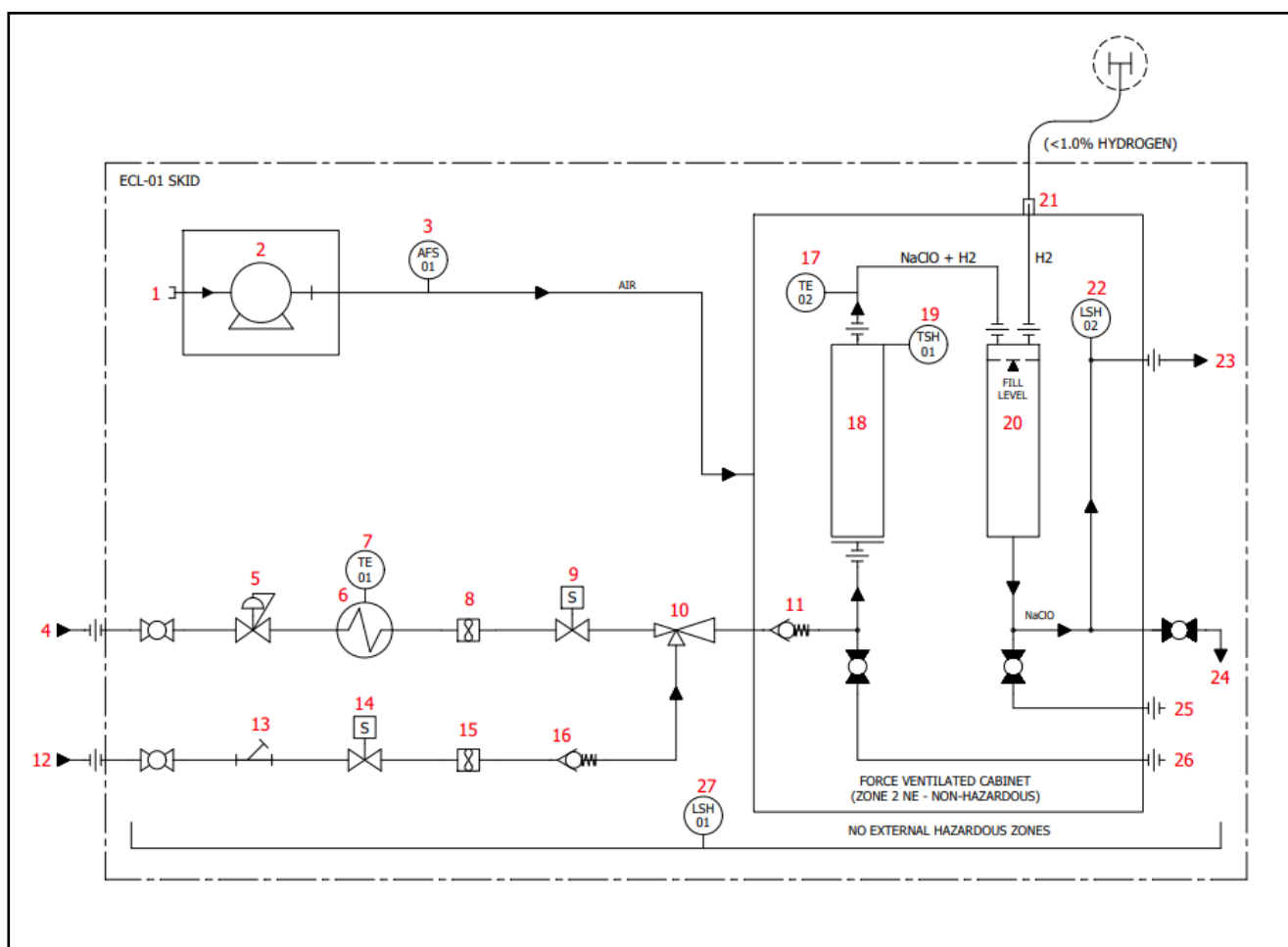
The EASYCHLORGEN T utilises ART (Adaptive Response Technology) which allows the system to adapt to environmental and site conditions, and poor maintenance.

Rather than entering an alarm state and stopping generation completely, the EASYCHLORGEN T reduces output capacity proportionally and displays a warning when:

- Ambient temperature is high.
- Inlet water temperature is high.
- Electrolytic cell temperature is high.
- When product temperature is high.
- Electrolytic cell scaling has occurred.
- Water pressure is unstable/low.
- Brine inlet pressure changes.
- Brine salinity changes.

If the parameters exceed alarm limits and the capacity cannot be reduced further the EASYCHLORGEN T enters an alarm state and stops generation.

4.7 System Process Flow



Tag	Description	Tag	Description
1	Air blower duct inlet	16	Non-return valve
2	Air blower	17	Product temperature sensor
3	Air flow sensor	18	Electrolytic cell
4	Softened water inlet	19	Electrolytic cell connection temperature switch
5	Pressure reducing valve	20	Degassing column
6	DC power supply heat exchanger	21	Vent outlet
7	DC power supply temperature sensor	22	Internal high-level switch
8	Water flow meter	23	Product outlet
9	Water solenoid valve	24	Product sample
10	Brine injector	25	Degassing column drain/CIP outlet
11	Non-return valve	26	Electrolytic cell drain/CIP inlet
12	Saturated brine inlet	27	Bund flood switch
13	Y-strainer	28	External vent termination point (1m Zone 2 radius)
14	Brine solenoid valve	29	Inlet water temperature sensor
15	Brine flow meter	-	

5 Technical Data

5.1 Data Table 250 / 500 / 1000 / 2000

Product Output (Approx.)		250	500	1000	2000
Cl ₂ capacity	g/h	250	500	1000	2000
Cl ₂ concentration	g/l	6 ±1.0			
NaClO solution	l/h	42	84	167	333
Inlet Water Specification*					
Pressure	bar	2 – 5			
Temperature	°C	8 – 23*			
Hardness (CaCO ₃)	mg/L	< 20			
Hardness	°dH	<1			
Turbidity	NTU	<5			
pH	-	6.5 – 8			
Particle size	µm	<100			
Iron	µg/l	<200			
Manganese	µg/l	<10			
Fluoride	mg/l	<2			
Free chlorine	mg/l	<1			
Environmental					
Protection class	IP	54 (Indoor use)			
Ambient temperature	°C	5 - 40			
Humidity	% RH	90 (non-condensing)			
Electrical Data**					
Supply voltage	V~	110 or 230 V~		230 V~ / 400 V 3N~ or 208 V 3N~	400V 3N~ or 208 V 3N~
Frequency	Hz	50 - 60			
Max. rated power	kVA	1.6	3.2	5.5	11
Consumption					
Salt consumption	kg/h	0.8 – 0.9	1.5 – 1.8	3.0 – 3.5	6.0 – 7.0
Efficiency of salt usage	kg/kg Cl ₂	3.0 – 3.5			
Energy consumption	kWh	1.0 – 1.25	2.0 – 2.5	4.0 – 5.0	8.0 – 10.0
Energy efficiency	kWh/kg Cl ₂	4.0 – 5.0			
Water consumption	l/h	42	83	167	333
Connections					
Water inlet	-	½" / 20mm			
Brine inlet	-	½" / 20mm			
Air blower duct inlet	-	2" / 63mm			
Drain/CIP Inlet	-	½" / 20mm			
Drain/CIP outlet	-	½" / 20mm			
Product outlet	-	1 ½" / 50mm			
Vent outlet	-	2" / 63mm			
Size Data					
Weight	kg	120	130	142	165
Dimensions	mm	1893 x 750 x 600 (H x W x D)			

*Output automatically de-rated above 23°C

**More voltage options available upon request

5.2 Salt Specification

Use salt with a minimum of 99.9% sodium chloride purity.

Salt used must meet local standards and regulations (e.g. BPR 528/2012, NSF 60, EN 973, EN 14805)

5.2.1 Minimum Requirements:

Element/Compound	Upper Limit (mg/kg)
Arsenic (As)	13
Cadmium (Cd)	1.3
Chromium (Cr)	13
Iron (Fe)	10
Mercury (Hg)	0.26
Nickel (Ni)	13
Manganese (Mn)	10
Lead (Pb)	13
Antimony (Sb)	2.6
Selenium (Se)	2.6
Calcium (Ca)	100
Magnesium (Mg)	100
Bromide (Br-)	100

6 Installation

WARNING



Incorrect installation causes hazards.

Death, serious injury or failure of equipment

- Only authorised service personnel with relevant qualifications can perform installation work.
- All requirements should be met to ensure safe and optimal operation of the equipment.

Installation must also comply with local, national and site regulations and guidance. If in any doubt consult the operator.

6.1 Location

Requirements:

- Natural high and low ventilation in the installation room.
- Mechanical ventilation must be used if there is insufficient natural ventilation.
- Ability to route ventilation pipework to a suitable termination point outside of the building.
- Sufficient space and adequate lighting for installation and maintenance work.
- Relevant warning signs in easily visible locations.
- A firm and level floor for the skid and any external tanks.
- Access to a potable quality softened water supply for permanent connection.
- All environmental conditions are met (see section 5).
- All local regulations are met including fire safety and accident prevention laws.
- Protected from unauthorised access.
- Smoking and naked flames prohibited in installation room and signs to show this.

6.2 Softened Water Supply

Requirements:

- Inlet water must meet the specifications stated in section 5.
- If hardness is above 20mg/l CaCO_3 a water softener must be installed to prevent scaling/fouling of the electrodes.
- Suitable backflow prevention that meets local regulations or the requirements of IEC 61770 & EN 1717 must be installed if connected to a potable water source.
- A booster pump is required if supply has low or intermittent pressure and flow.
- Softened cold water supply should be made in rigid PVC-U pipework.

6.3 Softener Regeneration Switch

If a simplex softener is installed, a 'regen' switch must be used and connected to the 'Remote Inhibit' signal of the EASYCHLORGEN T. This will stop the EASYCHLORGEN T whilst the softener is regenerating to prevent scaling of the electrodes and low water faults.

6.4 Saturated Brine Supply

- Saturated brine is drawn into the brine inlet from a salt saturator tank by means of a vacuum created by the EASYCHLORGEN T eductor.
- The saturated brine supply should be made in rigid PVC-U pipework.

6.4.1 Salt Saturator Tank

Requirements:

- Salt must meet the specification in section 5.2.
- The saturator must be supplied with softened water that meets the specification in section 5.1.
- Tank must be accessible for salt refilling and maintenance procedures.
- When PDV salt is used, saturator tanks must contain a bed of layered graded gravel to prevent blockages.
- Tank must be clearly labelled with:
 - Minimum & maximum fill levels
 - Type of media inside

6.4.2 Brine Break Tank

Installations may require remote bulk salt saturators, in this case a brine break tank connected to the main salt saturator can be installed closer to the EASYCHLORGEN T to maintain a consistent supply of brine.

6.5 Product Storage Tank

Requirements:

- The product outlet should be made in rigid PVC-U pipework with a solvent weld connection.
- Outlet piping should not restrict the flow.
- Outlet piping should not be reduced in diameter from the 1-1/2" / 50mm outlet connection.
- Maximum tank filling level = 1680mm. Level switches should be installed to stop the tank being filled above this point.
- The tank must be vented to atmosphere.
- Ensure all materials used for transfer and storage are suitable for contact with 0.6% NaClO .
- The tank must be clearly labelled with:
 - Date of commissioning or manufacture
 - Volume
 - Material
 - Type of media inside
 - Any relevant warning signs.

6.6 Level Switch

- A dual float level switch is supplied with the system which can be mounted to the top of the product storage tank to control the generation process.
- Maximum tank filling level = 1680mm. Level switches should be installed to stop the tank being filled above this point.
- The switch has a plug attached to a 5m cable for easy connection to the EASYCHLORGEN T control panel connector.

6.7 Hydrogen Ventilation

DANGER!



Explosive atmosphere

Death or serious injury

- Install in accordance with the instructions and local regulations.
- In no circumstances should the electrolytic cell be installed in an area without any ventilation.

To safely vent the hydrogen gas liberated from the electrolytic process the EASYCHLORGEN T requires the installation of a dedicated gas tight ventilation pipe duct from the vent outlet to open air at a suitable outside termination point.

When installed according to these instructions there is no hazardous zoning around the EASYCHLORGEN T system (EN 60079-10-1). The internal of the vent line is classified as zone 2 with 1m extent surrounding the external termination release point.

6.7.1 Vent Line Installation

Requirements:

- Take note of location requirements in section 6.1.
- Vent line must always be on an incline from the EASYCHLORGEN T to the external termination point.
- Vent line should be solvent welded rigid PVC-U.
- If non solvent welded joints are used, a 1m zone 2 area will exist around them in all directions.
- Use a minimum vent diameter of 2"/63mm.
- For vent lines longer than 15m, increase the diameter to maintain minimum airflow rates. Recommended diameters:
 - >15m length = 3" / 90mm
 - >30m length = 4" / 110mm
- Use long radius elbows to reduce disturbance to air flow rates.
- Support the pipework at regular intervals to avoid sagging which causes condensation traps and reduces air flow rates.
- Use a H piece arrangement at the termination point for protection from outside weather conditions.
- Do not locate the external termination point beneath any air intake or within 1m of any window or source of ignition.
- Provide and fix appropriate signage to vent pipework at regular intervals and at the termination point in accordance with local rules and regulations.
- It is advisable to have the following warnings at the termination point and inside the installation room: Warning Sign, No Smoking, No Naked Flames
- Protect termination point from vandalism if located in a public place.

6.8 Hydrogen Detector

Requirements:

- Hydrogen detector must be installed at a high level above the EASYCHLORGEN T or at the highest point of the room.
- Hydrogen detector must be installed in a location which is serviceable.
- To prevent permanent damage the detector must not be exposed to:
 - Propane or butane gas
 - Silicone or silicone-based materials
 - Acid gasses and fumes
 - Chlorine gas
 - Water
 - Excessive vibration

A second hydrogen detector can be installed and connected to the EASYCHLORGEN T if detection is required in two different locations. See field wiring diagram in section 6.11.6 for electrical connection.

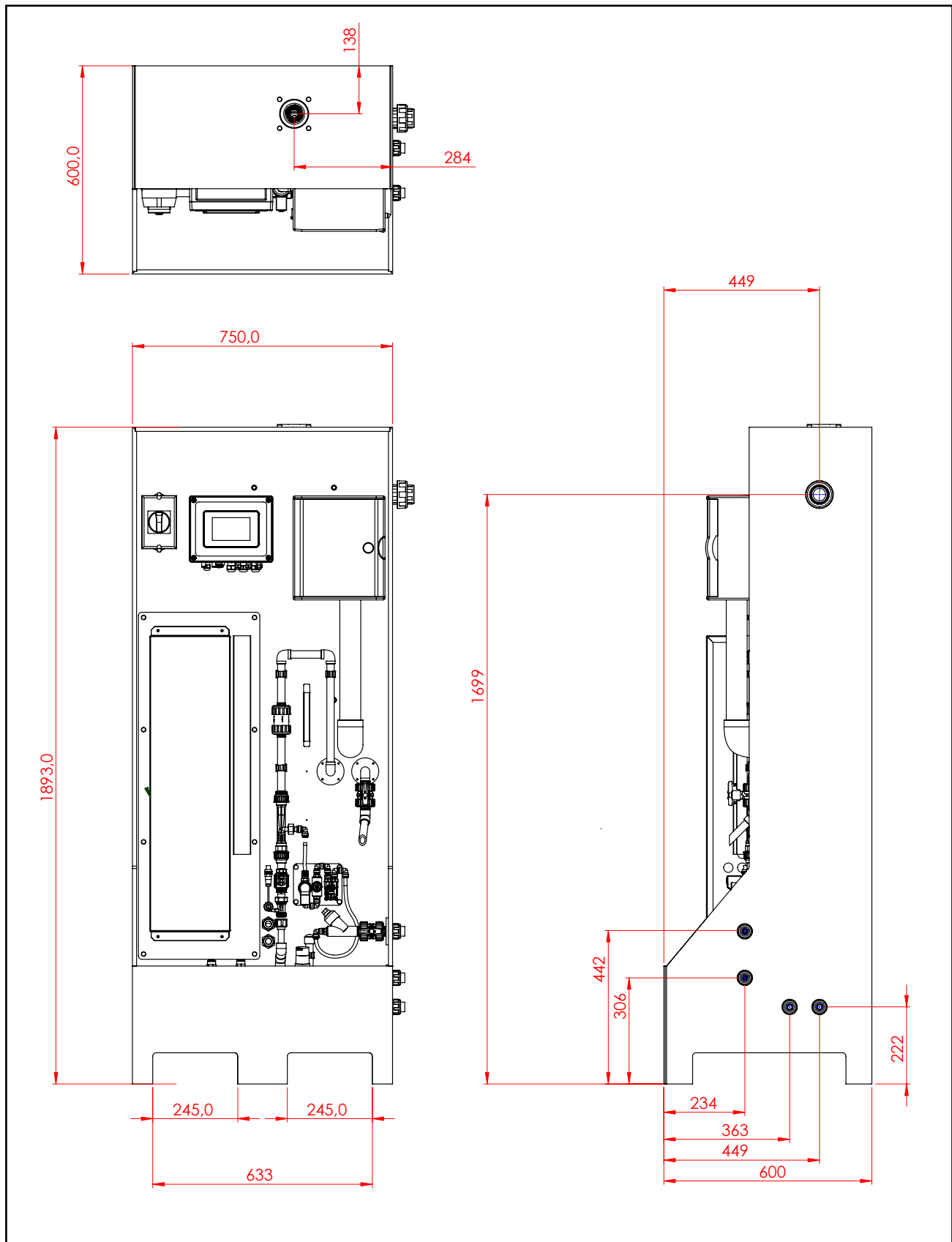
6.9 Air Blower Enclosure Duct

- The EASYCHLORGEN T hydrogen dilution air blower expels up to 260m³/hr of air from the installation room to the outdoor termination point.
- When installed in warm climates in air-conditioned rooms the air blower enclosure can be connected to a suitable outdoor intake to reduce the air-conditioning load.
- The intake must be suitably protected to prevent blockages, restriction, and vandalism.
- Duct pipework must not restrict airflow.
- Duct pipework must not be reduced from 2"/63mm diameter.

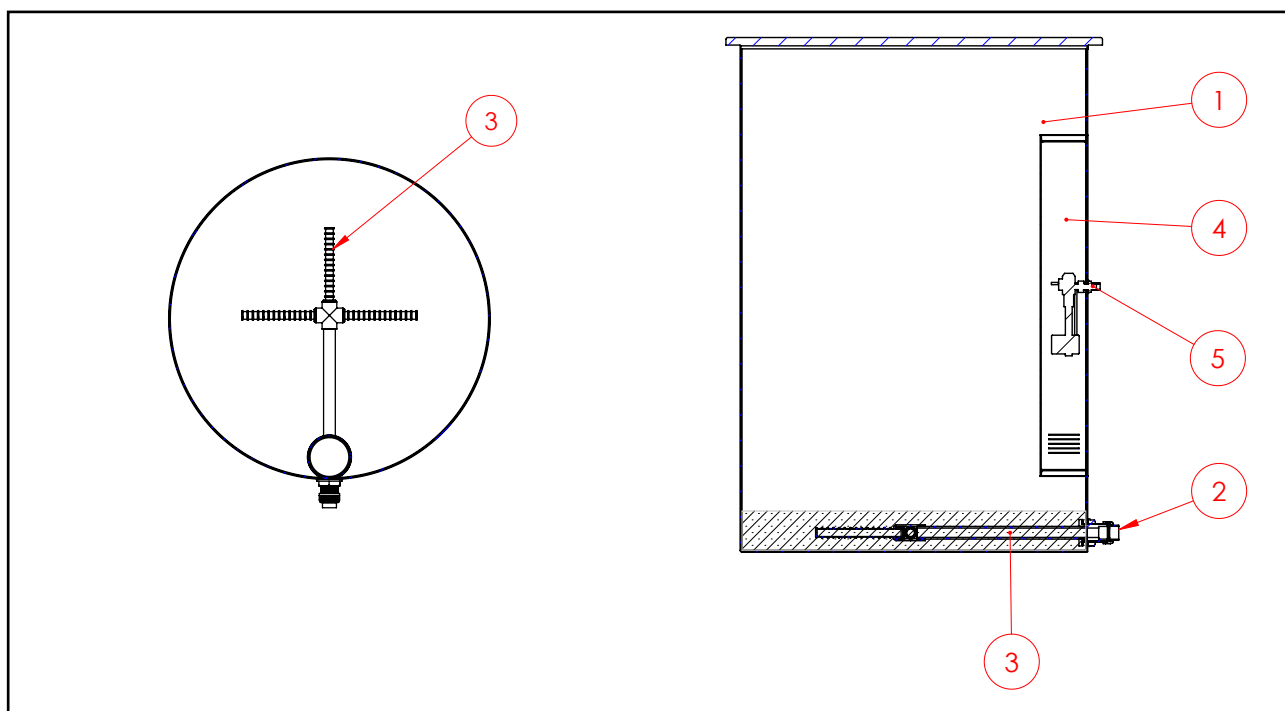
6.10 Dimensions

(All dimensions in millimetres)

6.10.1 EASYCHLORGEN T 250-2000

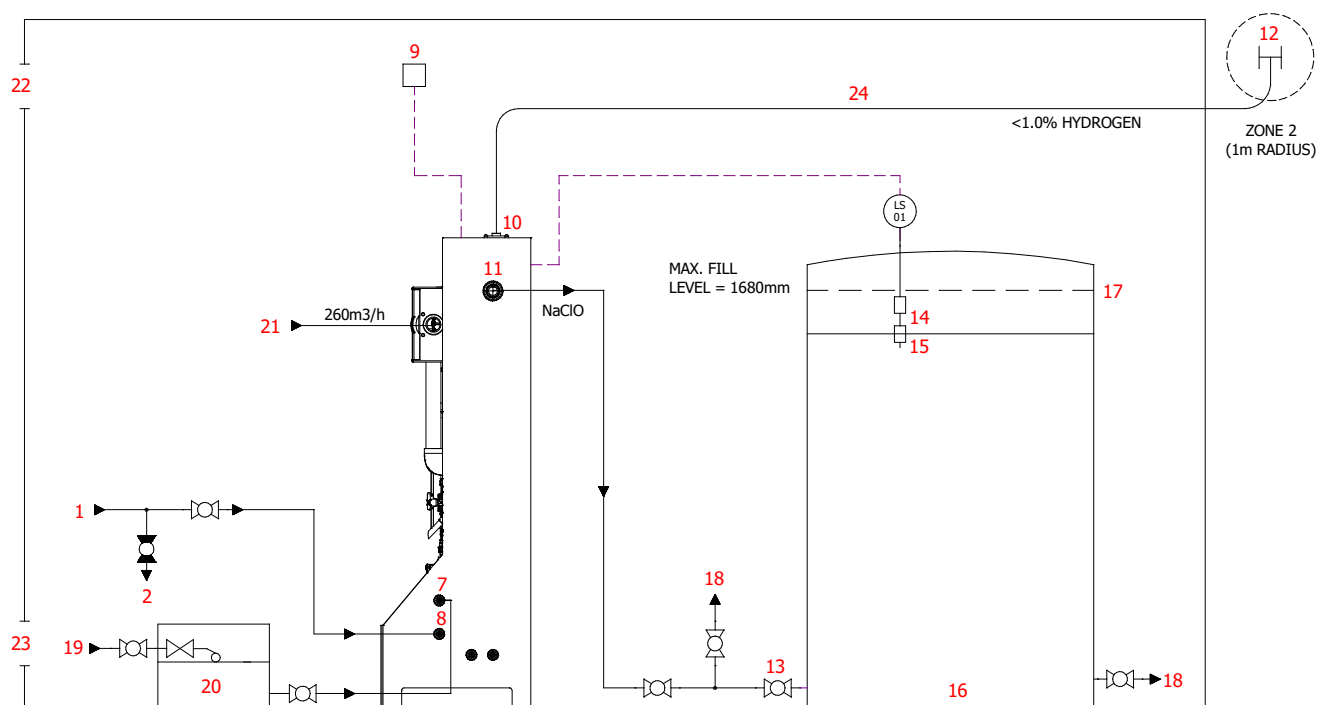


6.10.2 Salt Saturator Example



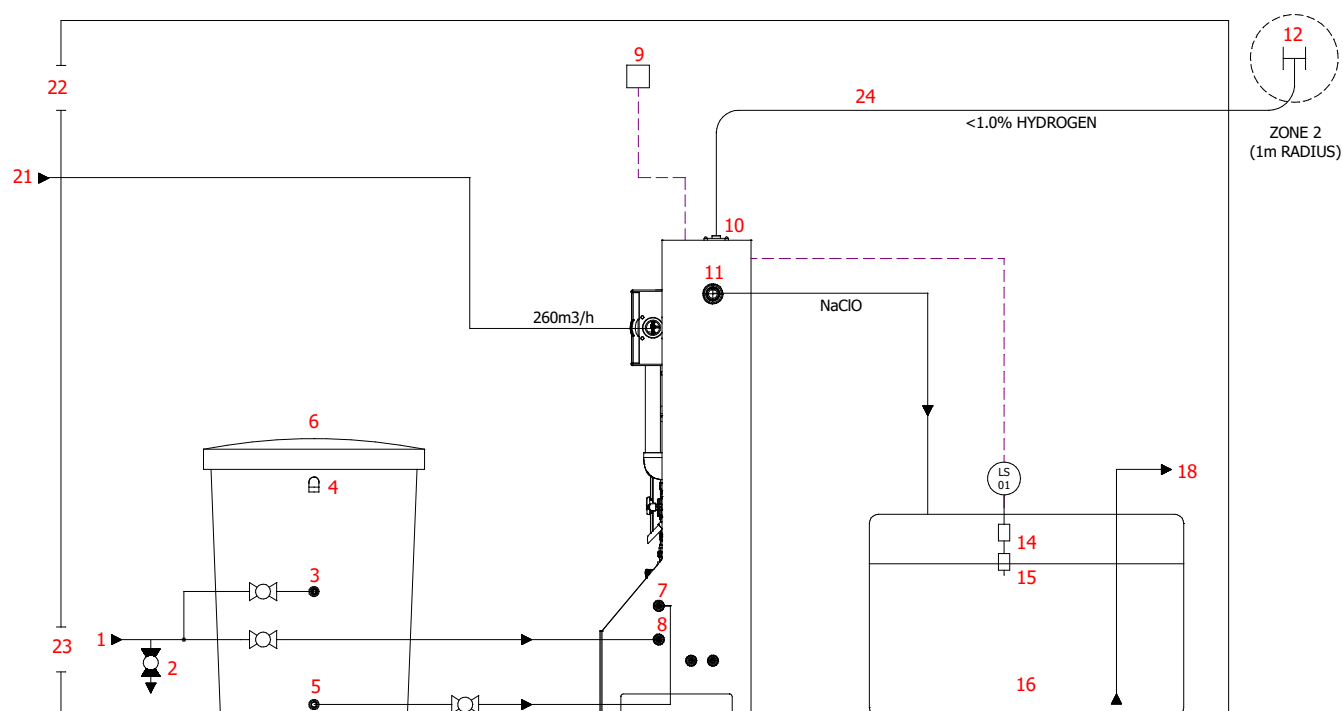
Tag	Description
1	Salt saturator tank Salt must meet the specification in section 5.2
2	Saturated brine outlet: - Connect to EASYCHLORGEN T brine inlet with rigid PVC-U pipe. - Outlet should be installed close to the bottom of the tank. - A brine well can be installed for use with a softener brine draw tube.
3	Saturator filter lateral: 0.3mm slots - Connected to the saturator outlet to prevent debris entering the EASYCHLORGEN T. - Washed gravel (4-6mm) bed to cover the filter laterals.
4	Float valve well: - Float valve is fitted inside a pipe to protect it from being blocked with salt. - The pipe has holes or slots to allow water to move freely without the salt entering the pipe.
5	Soft water inlet 1/2" BSPm/15mmOD connection. - Float valve should be no installed in the bottom half of the tank to prevent the water level rising to high when salt is replenished. - Water must meet the specification in section 5.1.

6.10.3 Install Layout Example 1



Tag	Description	Process Connection
1	Softened water supply	-
2	Soft water sample valve	-
3	Saturator inlet	-
4	Saturator overflow	-
5	Saturator outlet	-
6	Salt saturator tank	-
7	Brine inlet	1/2" / 20mm
8	Soft water inlet	1/2" / 20mm
9	Hydrogen detector	-
10	Vent outlet	2" / 63mm
11	Product outlet	1-1/2" / 50mm
12	External vent termination point	-
13	Product storage tank inlet	-
14	High-high level switch	G1" / 32mm clearance
15	Start-stop (Tank full) level switch	G1" / 32mm clearance
16	Product storage tank	-
17	Maximum fill level	-
18	Product outlet to dosing equipment	-
19	Brine supply from bulk saturator	-
20	Brine break tank	-
21	Airflow inlet	2" / 63mm
22	Natural high room ventilation	-
23	Natural low room ventilation	-
24	Diluted hydrogen vent line	Minimum 2" / 63mm

6.10.4 Install Layout Example 2



Tag	Description	Process Connection
1	Softened water supply	-
2	Soft water sample valve	-
3	Saturator inlet	-
4	Saturator overflow	-
5	Saturator outlet	-
6	Salt saturator tank	-
7	Brine inlet	1/2" / 20mm
8	Soft water inlet	1/2" / 20mm
9	Hydrogen detector	-
10	Vent outlet	2" / 63mm
11	Product outlet	1-1/2" / 50mm
12	External vent termination point	-
13	Product storage tank inlet	-
14	High-high level switch	G1" / 32mm clearance
15	Start-stop (Tank full) level switch	G1" / 32mm clearance
16	Product storage tank	-
17	Maximum fill level	-
18	Product outlet to dosing equipment	-
19	Brine supply from bulk saturator	-
20	Brine break tank	-
21	Airflow inlet	2" / 63mm
22	Natural high room ventilation	-
23	Natural low room ventilation	-
24	Diluted hydrogen vent line	Minimum 2" / 63mm

6.11 Electrical

WARNING



Electrical shock hazard

Death or serious injury



- Disconnect from electricity supply before working on equipment.
- Only authorised service personnel with relevant qualification can perform electrical work.

NOTICE



Damage to the system

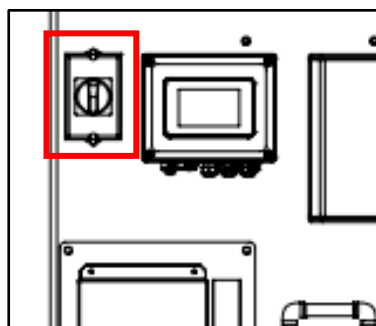
Failure of main components.

- Study installation instructions and field wiring diagrams before commencing work.

6.11.1 Connection to the Mains Supply

The EASYCHLORGEN T is intended for use as fixed equipment. The equipment is designated IEC Class 1 and must be earthed in accordance with local regulations.

Connect the mains supply to the -Q1 switch disconnect highlighted below. Connection diagrams for the various EASYCHLORGEN T models are shown in section 6.11.5.



Recommendations:

- Use a circuit breaker meeting the requirements of IEC 60947-2, type C or K to protect the final circuit. It must be clearly identified.
- Connect the cable cores in accordance with local wiring regulations and the wiring diagram.

6.11.2 Field Wiring

Use the field wiring diagrams to make any external connections to the EASYCHLORGEN T controller.

Inputs may need to be activated via the 'Settings 1' screen on the controller HMI.

6.11.3 Product Tank Level Switches

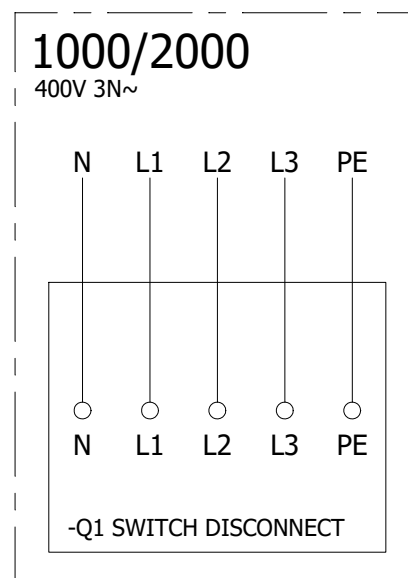
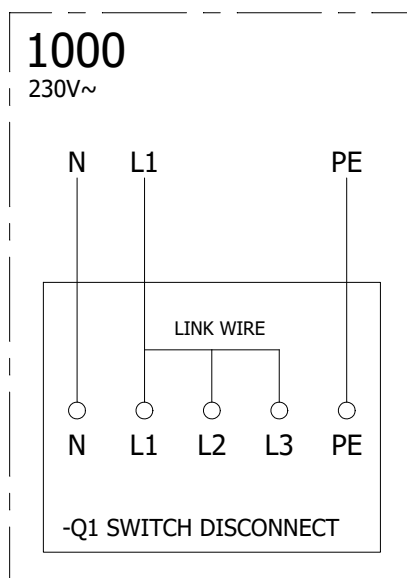
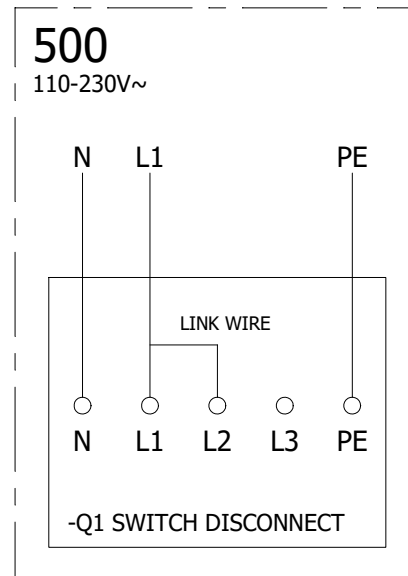
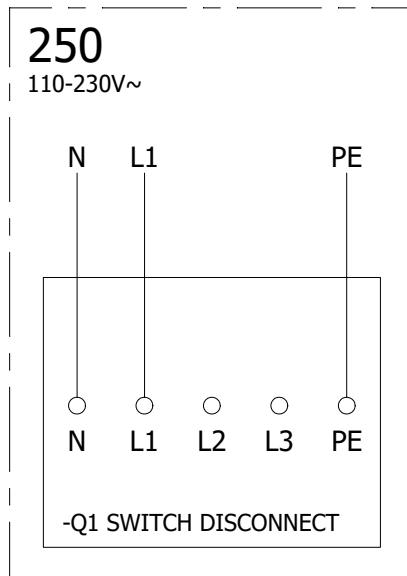
A dual float level switch is supplied with the EASYCHLORGEN T to control the tank filling process. The switch has a plug attached to a 5m cable for easy connection to the EASYCHLORGEN T control panel connector.

Panel connector detail:

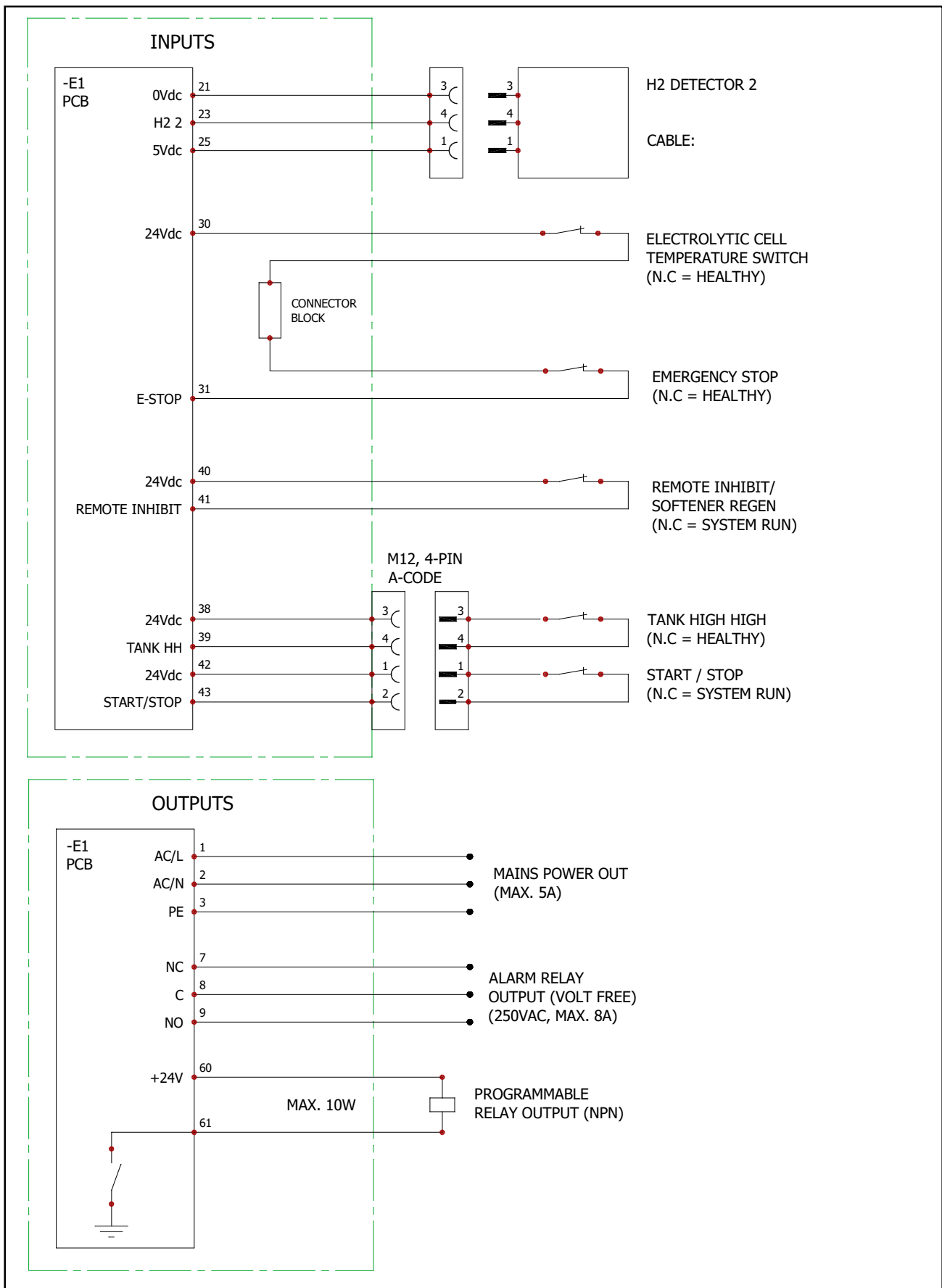
- M12, 4-pin, female, A-code
- Pin 1 & 2 = Start/Stop input:
 - (NC = Start)
 - (NO = Stop/Tank full)
- Pin 3 & 4 = Tank High-High input:
 - (NC = Healthy)
 - (NO = Tank high-high alarm)

6.11.4 Connection Table

I.D	Description	I.D	Description
1	L Out	41	Remote Stop/ Softener regen stop
2	N Out	42	24V
3	PE Out	43	Start/Stop
4	L (110-230Vac)	44	A FM
5	N	45	Dilution A FM
6	PE	46	24V
7	N.C Alarm relay	47	24V
8	C Alarm relay	48	B FM
9	N.O Alarm relay	49	Dilution B FM
10	C Run relay	50	0V
11	N.O Run relay	51	0V
12	0V	52	24V
13	Electrolytic cell volts	53	O1 Water valve
14	0V	54	24V
15	Airflow signal	55	O2 Brine valve
16	0V	56	24V
17	0V	57	O3 Acid valve
18	24V	58	24V
19	Water FM	59	O4 PSU relay A2
20	0V	60	24V
21	0V	61	O5
22	H ₂ 1	62	24V
23	H ₂ 2	63	Blue LED
24	5V	64	Red LED
25	5V	65	24V
26	24V	66	0V
27	Spare	67	AO0 DC amps
28	24V	68	0V
29	Bund flood	69	AO1
30	24V	70	PSU temp +
31	E-stop	71	PSU temp -
32	24V	72	Inlet water temp +
33	Spare	73	Inlet water temp -
34	24V	74	Product temp -
35	Spare	75	Product temp +
36	24V	76	Product temp -
37	Tank LL	77	0V
38	24V	78	0V
39	Tank HH	79	+24V PLC
40	24V	-	

6.11.5 Field Wiring – Mains Power (-Q1)

6.11.6 Field Wiring – I/O



7 Commissioning

WARNING



Damage to the system and risk of injury to personnel

- Commissioning must only be done by authorised service personnel.
- Wear effective PPE.

7.1 Pre-Startup Checks

		(✓)
1	Check equipment has been installed according to all requirements in section 6.	
2	Check environmental conditions meet the specifications listed in section 5.1.	
3	Check the saturator is filled with salt which meets specification listed in section 5.2.	
4	Check all connections and valves are tight both internal and external to the EASYCHLORGEN T.	
5	Check the hydrogen vent line installation and outside termination point.	
6	Check hydrogen detector is installed in suitable location.	
7	Check all electrical connections have been made correctly.	
8	Check level switches have been installed in the product storage tank.	
9	Check water softener is installed according to manufacturer's instructions and working correctly.	
10	Check inlet water valve is closed.	

7.2 Commissioning Checklist

Power On		(✓)
11	Turn the main switch disconnect to the on position.	
12	Configure commissioning settings (EASYCHLORGEN T is delivered fully tested and pre-configured)	
Settings 1 Screen		
13	Set 'SYSTEM TAG' and 'SITE TAG'.	
14	Set status of installed field connections (LINKED OUT = Input not in use).	
15	Set 'MAX. OUTPUT'.	
16	Set batch mode (OFF if installed with product storage tank and level switches).	
Settings 2 Screen		
17	Set 'SOFT START'.	
18	Set 'RESTART DELAY' timer.	
19	Set 'BRINE' volume per batch.	
Maintenance Screen		
20	Reset 'SERVICE' counters.	
21	Set IP settings & slave address if required.	
Start-Up		
22	Open water inlet valve to begin filling the electrolytic cell.	
23	Set pressure regulating valve to 1.5 Bar (150 kPa) whilst solenoid valves are open.	
24	Check for leaks.	
25	Check bund flood switch operation.	
26	Check tank start/stop switch operation.	
27	Check tank high level switch operation.	
28	Check any other field connections operate correctly.	
29	Allow the EASYCHLORGEN T to generate for 60 minutes before filling in the commissioning log.	
On-site User Training		
30	Explain the basic operation of the plant and sodium hypochlorite and hydrogen safety.	
31	Explain the maintenance tasks required (See section 11).	
32	Show the user how to complete the operation log (See section 12).	

7.3 Commissioning Log

General	
System serial number	
System part number	
Maximum capacity (g/h)	
External storage capacity (L)	
Salt saturator capacity (kg)	
Softener model	
Salt brand & type	
Dosing pump capacity/l/s	
Displayed Values	
Volts (V)	
Amps (A)	
Hydrogen (% of LEL)	
Airflow (m ³ /hr)	
Pressure (Bar)	
Water temp (°C)	
PSU temp (°C)	
Product temp (°C)	
Settings	
Soft start (mins)	
Restart delay (HH:MM)	
Brine volume/batch (mls)	
Max. output (%)	
Site/Measured Values	
Hardness (Pre-softener)	
Hardness (Post-softener)	
Inlet pressure	
DC Amps (A)	
AC Volts (V)	
Product strength (% / ppm)	
Product density	

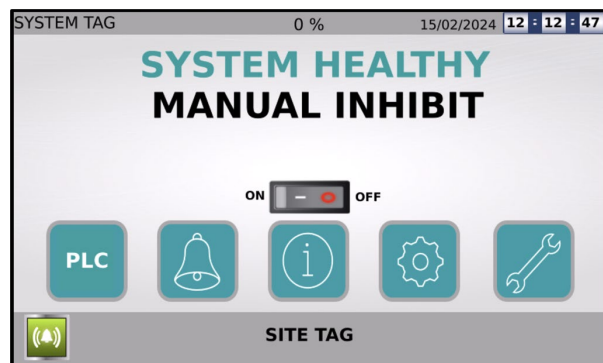
8 Operation

8.1 Controller HMI

The EASYCHLORGEN T is operated by a touchscreen HMI, only use your finger or a touch stylus on the surface of the screen.

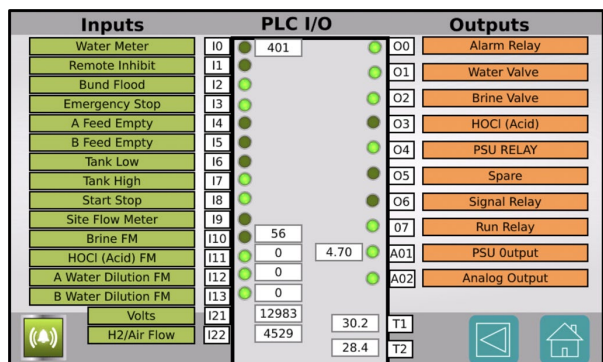
8.1.1 Home Screen

Shows basic information, sub-menu icons, and allows manual operation via the ON/OFF button.



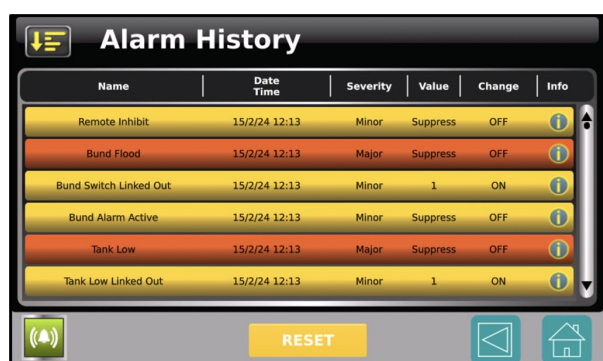
8.1.2 PLC I/O Screen

Shows the status of the digital and analogue inputs including live pulse counters from the water and brine flow meters.



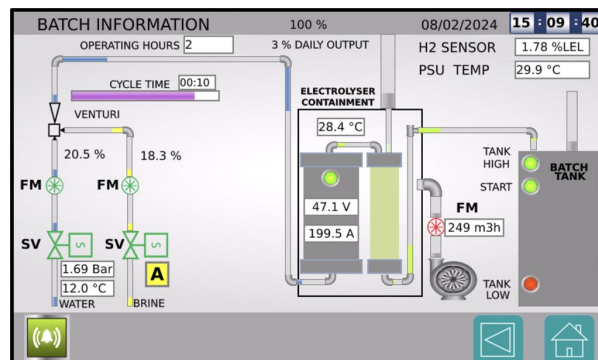
8.1.3 Alarm/System Log

Shows history of alarms, acknowledgements, de-rating occurrences, system status changes and basic settings changes.



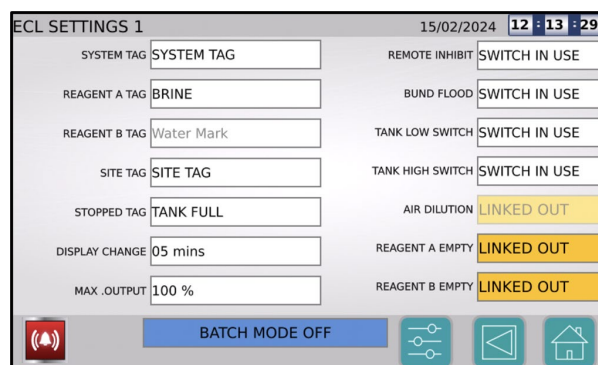
8.1.4 Process Information

Shows a process mimic which includes current status or readings of flow meters, valves, sensors, cycle times, and product tank.



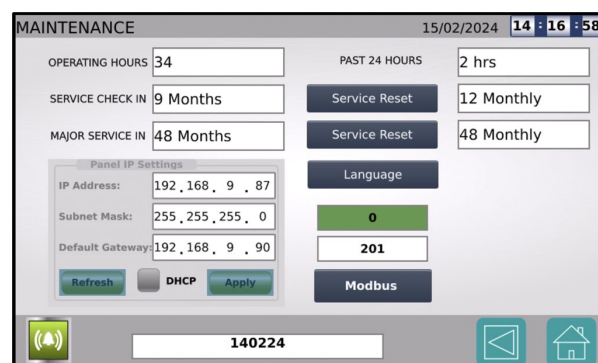
8.1.5 Settings 1

Allows adjustment of basic settings, tags, and inputs.



8.1.6 Maintenance

Shows the operating hours, maintenance schedules, panel IP and language settings.



8.1.7 User Rights

To change settings and access certain features in the software you must be logged in as a user. There are three different users each with different privileges.

'Operator' rights (Password = 002236):

- Access to basic settings.

'Service' rights:

(For authorised service personnel only)

- Access to advanced settings.
- Access to maintenance functions.
- Access to serial communication settings.

8.1.8 Log in Procedure

1. Press and hold the area in the top right corner of the screen until the log in window appears.
2. Select the user type and enter the password.



8.2 Controller Functions & Settings

8.2.1 Manual Inhibit

The operation of the EASYCHLORGEN T can be manually inhibited to stop generation. Press the ON/OFF switch on the home screen.

8.2.2 Remote Inhibit

- Operation can be remotely inhibited by an external volt free contact connected to the EASYCHLORGEN T control panel.
- The screen will display 'Remote Inhibit' when active.
- The input has to be selected in 'Settings 1' if in use.

8.2.3 Stopped/Tank Full

- Operation can be stopped by an external volt free contact or tank level switch connected to the EASYCHLORGEN T control panel.
- Select the tag to be displayed (Stopped or Tank Full) in 'Settings 1'.

8.2.4 Restart Delay

- When the product tank level drops and the start/stop switch falls, a delay timer is activated and begins counting down.
- Once the timer has reached zero, the generation process restarts.
- Restart delay time can be adjusted in the settings 2 menu, depending on the size of storage tank and demand of the application.
- The restart delay time can be manually overridden by pressing the override button on the process information mimic screen.

8.2.5 Max. Output

Maximum output capacity can be reduced in 'Settings 1' if 100% is not required. This will increase durability and prolong life of the electrolytic cell and power supply components.

8.2.6 Soft Start

The soft start function in 'Settings 1' starts the generation output capacity at 70% and will increase towards the maximum output capacity over the set time period.

8.2.7 Brine (mls/batch):

Brine volume per batch can be adjusted between 50ml-75ml. Factory setting = 65ml per batch.

<65mls/batch:

- Less salt consumed per kg of Cl₂ generated.
- Product with low chloride content.
- Higher power consumed per kg of Cl₂ generated.

>65mls/batch:

- More salt consumed per kg of Cl₂ generated.
- Less power consumed per kg of Cl₂ generated.

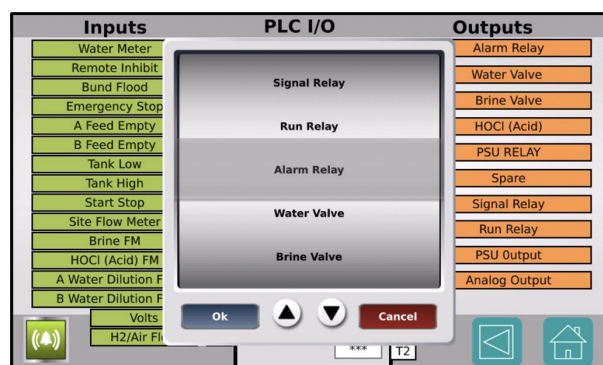
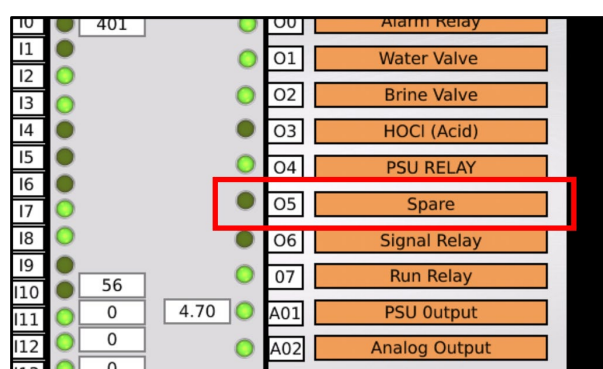
8.2.8 Programmable Output

Output 5 of the PCB can be connected to an external relay, an NPN PLC input, or be used as a spare in case of another output failure (see section 6.11.6 for field wiring connection).

The output can be selected to mirror the following outputs:

- Run relay
- Alarm relay
- System-derating warning
- Water valve
- Brine valve
- PSU relay

When logged in under the 'Service' username, navigate to the 'PLC I/O' screen and press the spare output to configure its operation.



8.3 Controller Communication

The controller allows for the following communication protocols as standard:

- Modbus TCP
- Ethernet/IP
- Email
- VNC
- SMS

A plug-in interface module is required for:

- Modbus RTU (RS-485 module)

8.4 Emergency Shutdown

- In the event of an emergency the generating process can be immediately stopped by an emergency stop switch.
- All power to the outputs is removed when the switch is depressed, and a software alarm is activated.

8.5 Hydrogen Detector

- The hydrogen detector is a backup safety device to shut down the chlorine generation process in event of a hydrogen leak.
- Elevated levels of hydrogen will never be present if the system is installed in accordance with section 6.
- The EASYCHLORGEN T has many safety features built-in to prevent a hydrogen leak from occurring.
- The hydrogen detector shuts the system down and creates an alarm state when a level of 1000ppm H₂ is detected (2.5% of the LEL).

9 Shutdown & Emptying

WARNING



Chemical exposure hazard.

Death or serious injury

- Only authorised service personnel can empty the system.
- Chemicals may still remain in the system even after flushing.

The EASYCHLORGEN T should be flushed with water before maintenance tasks and emptied during shutdown periods.

9.1 System Flush

1. Connect a hose/pipe to the EASYCHLORGEN T brine inlet and place it into a container of water. This will allow the brine metering components to be flushed with water to prevent salt crystallising inside them during shut down periods.
2. Turn power off and on again using the switch disconnect on the EASYCHLORGEN T.
3. A flush/filling cycle will commence when powered on.
4. Power off before generation happens, repeat the process two times to ensure both the electrolytic cell and degassing column have been flushed with water.

9.2 System Drain

1. Follow the system flush procedure.
2. Isolate the power and the inlet water supply.
3. Connect a hose/pipe to the EASYCHLORGEN T drain outlets and direct them to a drain or container.
4. Remove the electrolytic cell cabinet window.
5. Open the drain valves to empty the electrolytic cell and degassing columns.

9.3 Neutralising

Sodium hypochlorite may still be present in the solution emptied from the electrolytic cell and degassing column, neutralise with sodium sulphite, and dilute with water before releasing into a drain.

Disposal should be done in accordance with local and site regulations and rules.

9.4 Shutdown

It is always recommended to keep the EASYCHLORGEN T in standby to prevent corrosion of electrical components.

Shutdown notes:

- Follow the system flush and system drain procedure.
- Drain the product storage tank and dispose of sodium hypochlorite in accordance with local and site regulations and rules.
- Check the steel power pack enclosure is sealed shut.
- Check the electrolytic cell window compartment is sealed shut.
- Fit the yellow pipe cap to the electrolytic cell compartment air inlet elbow.
- Lock the switch disconnect in the off position.
- Lock the water inlet supply valve in the off position.
- Ensure the installation room will meet environmental specifications in section 5.1.
- Ensure there is sufficient heating and ventilation to prevent condensation and corrosion.
- Remove any corrosive liquids and gases from the installation room.

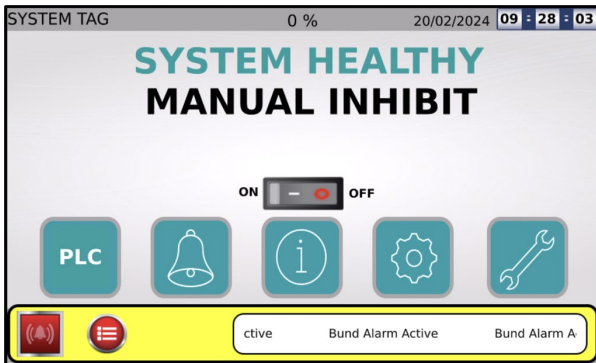
9.5 Disposal of Old Equipment

- The system must be disposed of in accordance with applicable local laws and regulations. It should not be disposed of as domestic waste.
- As the disposal regulations differ from country to country, please consult the operator for advice.

10 Troubleshooting

10.1 System Warning

- System warnings are displayed on a yellow banner at the bottom of the screen.
- After a set 'alarm delay' period some warnings will cause a system fault.
- Warnings are logged in the alarm history.

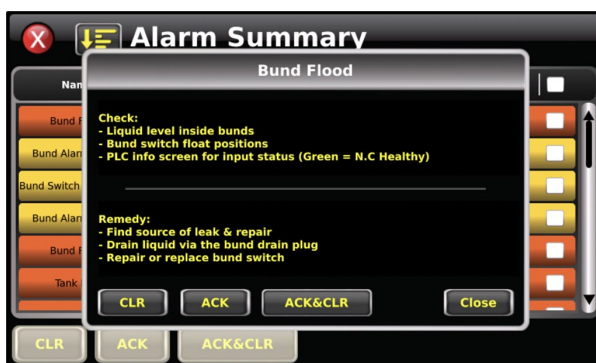


10.2 System Fault

- System faults are displayed on an orange banner at the bottom of the screen.
- Once a fault condition is rectified the reset button can be pressed to change the status to 'Healthy' and resume generation.
- Press  for access to the alarm summary.



- Press the 'Info' icon in the alarm summary to show the cause and possible remedies of the fault condition.



10.3 Fault Messages

Message	Cause	Remedy
Bund Flood	Liquid leak inside skid spill bunds.	Find source of leak, repair and empty the bunds.
	Bund switch float is stuck in upwards position or is open circuit.	Repair or replace bund switch.
Emergency Stop	Emergency stop switch has been depressed.	Reset emergency stop switch if safe to do so.
	Fault with E-stop wiring circuit or switch.	Check and repair switch wiring.
Tank Low	Product storage tank is leaking.	Find source of leak and repair.
	Level sensor is in open circuit position.	Repair or replace level switch.
	Application demand is too high for the output of the generator.	Reduce application demand or increase size of generator.
	Output setting is too low.	Increase output % in settings.
Tank High	Water solenoid valves are leaking.	Find source of valve leak and repair or replace.
	Start/Stop or high-level sensor is lifted or in open circuit position.	Repair or replace level switch.
	There is backflow from the application into the product storage tank.	Rectify backflow from application.
Water Flow Fault	Low inlet water pressure.	Adjust PRV, increase water pressure, install a water boost system.
	PRV strainer blockage.	Clean PRV strainer.
	Faulty water solenoid valve or connection.	Repair or replace water solenoid valve.
	Faulty water flow meter or wiring connection.	Repair or replace water flow meter.
	Blockage in the system.	Remove any blockages.
Water Valve Fault	Water solenoid valve is stuck in open position.	Remove debris from solenoid valve. Repair or replace water solenoid valve.
	Water solenoid valve is installed in the wrong orientation.	Check the arrow on the body of the valve matches the direction of flow and change if necessary.
	Inlet water pressure is too high.	Adjust inlet water pressure is set to 1.5 Bar on the PRV. Repair or replace PRV.
	Water solenoid valve is being energised when it shouldn't be.	Check PLC and PCB wiring and output statuses and repair/replace.
H₂ Sensor Fault	H ₂ signal not detected.	Check and repair wiring and H ₂ detector connection. Repair or replace H ₂ detector.
	H ₂ detector disconnected.	Check cable integrity and replace if necessary. Replace or replace H ₂ detector.
H₂	Vent line is damaged or is not gas tight.	Repair vent line.
	Electrolytic cell cabinet is leaking air.	Repair any leaks on electrolytic cell compartment sealing and fittings.
	H ₂ detector reading incorrectly.	Repair or replace detector.
High Volts	Low volume of brine per batch.	Adjust brine volume setting to 50-75mls. Check for and remove blockages in the brine line. Adjust water pressure to 1.5 Bar at the PRV.
	Low brine concentration.	Refill saturator with salt. Check salt saturator fill valve isn't passing and repair/replace if necessary.
	Scaling/fouling of electrodes.	Acid wash electrolytic cell and find the source of the scaling/fouling. Repair/replace water softener. Check salt quality meets the specification in section 5.2.
	DC power supply output is on whilst the EASYCHLORGEN T generation is stopped.	Check the PSU run signal wiring. Check the run relay status. Repair or replace PSU/PLC/PCB.

Message	Cause	Remedy
Low Volts	High volume of brine per batch.	Check brine volume setting is 50-75mls.
	Brine solenoid valve is stuck in open position.	Remove debris from solenoid valve. Repair or replace solenoid valve. Check PLC and PCB wiring and output statuses and repair/replace.
	DC power supply has no output voltage.	Check PLC and PCB wiring and output statuses and repair/replace. Replace PSU relay. Replace PSU fuses. Replace PSU.
High Amps	DC amp adjustment setting is incorrect.	Contact the operator.
Low Amps	DC amp adjustment setting is incorrect.	Contact the operator.
	System has derated its output to its minimum level.	Ensure site and environmental conditions meet the parameters in section 5. See the EASYCHLORGEN T alarm log for de-rating warning history.
Airflow High	Electrolytic cell window compartment not sealed properly.	Fit the window or repair seals.
	Vent line is broken.	Repair/replace vent line.
Airflow Low	Vent line is blocked or restricted.	Remove blockage. Ensure vent line is on a constant incline to the termination point to prevent condensation traps occurring.
	Vent line is too long.	Increase diameter of vent line. Remove elbows, if possible, Use long radius elbows where possible.
	Airflow sensor is faulty.	Replace sensor.
	Air blower is faulty.	Replace air blower.
	Air blower PSU is faulty.	Replace air blower PSU.
PSU Temp High	Inlet water temperature is too high.	Install water chiller.
	PSU enclosure separation baffle has been removed.	Fit new separation baffle.
	Enclosure axial fans have failed (2000 only)	Replace axial fans.
Product Temp High	Inlet water temperature is too high.	Install water chiller.

10.4 System Messages

Message	Reason
Remote Inhibit	Remote inhibit connection is open circuit. External control has called for the system to be remotely stopped.
Manual Inhibit Active	The system has been manually stopped by the ON/OFF button on the display.
Stopped/Tank Full	External tank level has reached the start/stop tank full switch. External control has stopped the system. Start/stop input (Terminal 42/43) is disconnected. Level switch is faulty.
Service Check	System service check counter has reached 0 months, service check is now due. Authorised service personnel can reset this warning once a service has been completed.
Major Service Due	Major service counter has reached 0 months, service is now due. Authorised service personnel can reset this warning once a service has been completed.
'XXXXXX' Linked Out	Digital input has been made inactive and will not trigger warnings or alarms. This is recorded.

11 Maintenance

The EASYCHLORGEN T is designed to have a long service life, however some parts are subject to operational wear. Therefore regular visual inspections and maintenance are necessary.

DANGER!



Electrical shock hazard

Death or serious injury



- Disconnect from electricity supply before working on equipment.
- Only authorised service personnel with relevant qualifications can perform electrical work.

NOTICE



Damage to the system

Failure of main components



- Study maintenance instructions before commencing work.
- Only authorised service personnel can perform maintenance tasks.

WARNING!



Chemical exposure hazard.

Death or serious injury

- Only authorised service personnel can perform scheduled maintenance work.
- Wear effective PPE.

11.1 Maintenance Checks for Users

Maintenance checks which are to be performed regularly by users after being trained by the operator / authorised service personnel.

11.1.1 Softened Water Supply

- Water hardness tests should be completed and recorded regularly with a maximum interval of 7 days between tests.
- Calcium hardness should read below 20mg/l CaCO_3 .
- Contact the operator immediately if hardness readings are high.

11.1.2 Salt Saturator Refill

- Ensure the saturator is refilled regularly with the correct specification salt to avoid high voltage alarms and electrode scaling/fouling.

11.1.3 General

- Complete the operation log (See section 12).
- Check for leaks.
- Check condition of pipework and components.
- Contact the operator immediately if there are any leaks or damage to the equipment.

11.2 Maintenance for Authorised Personnel

11.2.1 EASYCHLORGEN T

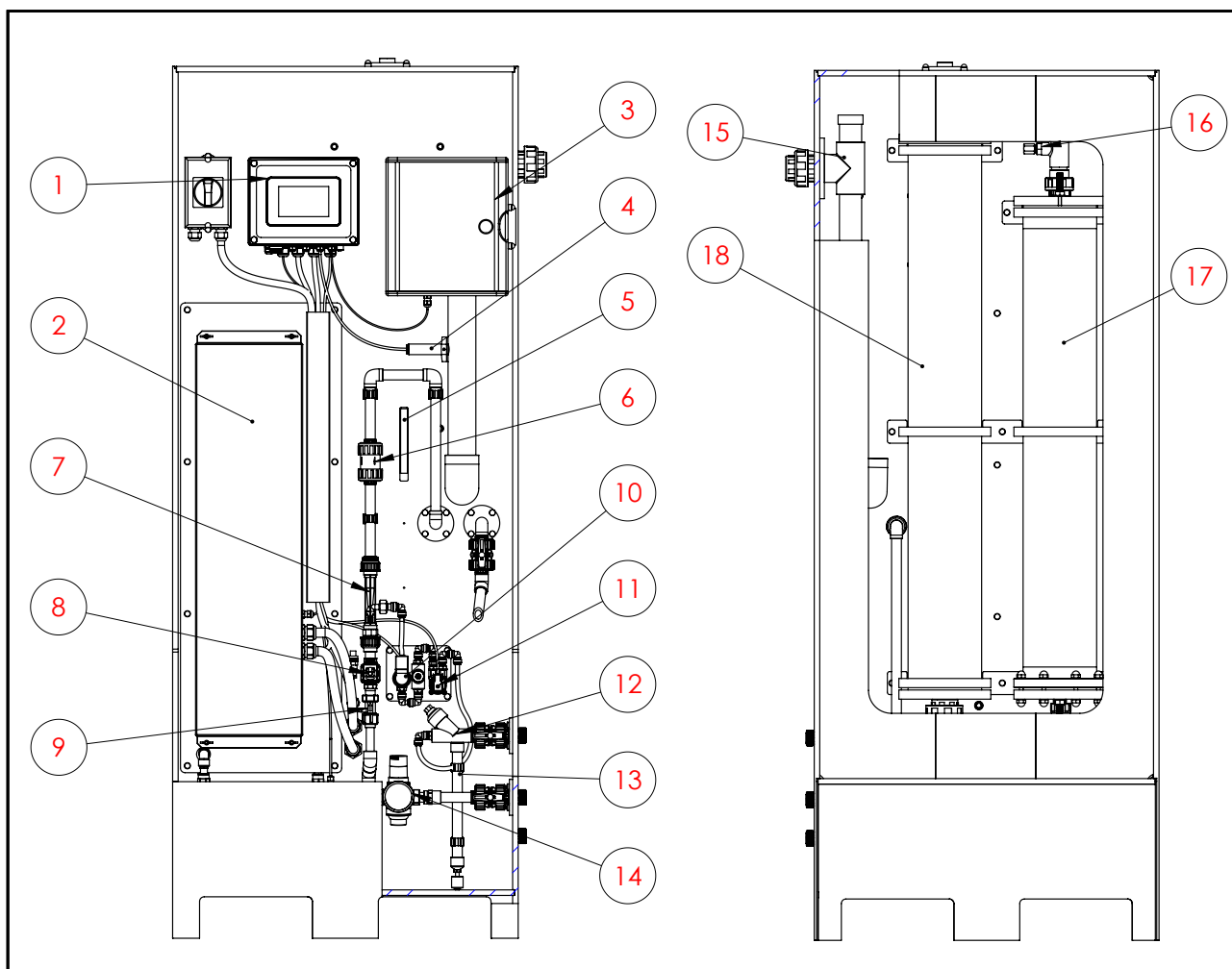
- The EASYCHLORGEN T has a 4-year preventative maintenance schedule with two-year intervals once the 4th year is reached the cycle repeats.
- Annual checks should be made to ensure the EASYCHLORGEN T and associated equipment are working correctly.
- All seals in the EASYCHLORGEN T are chemically resistant and do not need replacement as part of the 4-year maintenance cycle. Seals in contact with NaClO solution are recommended to be replaced 4-6 years from the date of installation.
- The internal electrolytic cell seals should not have to be replaced within the timespan of its 8-year recommended operating life.

11.2.2 Water softener

The water softener must be regularly maintained to prevent scaling/fouling of the electrodes. Refer to the softener manufacturer's instructions for maintenance procedures.

11.3 Maintenance & Spares

Only authorised service personnel are permitted to replace the parts in this section.



11.3.1 Preventative Maintenance Schedule

Interval	No.	Description	Quantity	Maintenance Set	
Year 2	8	Water solenoid valve assembly	1	2nd Year - Service Kit EASYCHLORGEN T	2nd Year - Service Kit EASYCHLORGEN T complete
	10	Brine solenoid diaphragm	1		
	-	Hydrogen detector	1		
	14	PRV maintenance kit	1	-	
Year 4	8	Water solenoid valve assembly	1	4th Year - Service Kit EASYCHLORGEN T	4th Year - Service Kit EASYCHLORGEN T complete
	10	Brine solenoid valve assembly	1		
	-	Hydrogen detector	1		
	6	Dilution water NRV	1		
	1	PLC Battery	1		
	14	PRV maintenance kit	1	-	

11.3.2 Seals Maintenance Schedule

Interval	No.	Description	Quantity	Maintenance Set
Year 4 - 6	-	Seals kit (Seals in contact with NaClO)	1	Gasket set EASYCHLORGEN T (4 years)

11.3.3 Spare Parts List

No.	Description	Quantity
1	PLC	1
1	PCB	1
1	PLC-PCB Connector board kit (3x boards, 3x ribbon cables)	1
1	PLC Battery	1
1	Fascia (Navy)	1
5	LED status indicator	1
-	Hydrogen detector	1
-	Hydrogen detector cable	1
3	Air blower (H ₂ Dilution)	1
2	Axial fan (2000 PSU enclosure)	1
2	Air blower DC power supply	1
4	Air flow sensor	1
2	PSU Fuse set (3x 20A, 10x38 Midget Fuse)	1
2	PSU contactor	1
2	PSU Single module (250/500)	1
2	PSU Single module (1000/2000)	1
2	DC cable set (250/500)	1
2	DC cable set (1000/2000)	1
2	PSU Busbar (500)	1
2	PSU Busbar (2000)	1
2	PSU signal cable (250/500)	1
2	PSU signal cable (1000/2000)	1
10	Brine solenoid valve assembly	1
11	Brine flow meter	1
13	Bund float switch	1
15	Product outlet level switch	1
-	External tank level switch	1
12	Y-strainer	1
12	Y-strainer mesh	1
6	Non-return valve (Water)	1
10	Non-return valve (Brine)	1
-	Ball valve (red/yellow handle)	1
9	Dilution water flow meter	1
8	Dilution water solenoid	1
7	Brine eductor	1
14	Pressure Reducing Valve	1
16	Product temperature sensor	1
-	Water inlet temperature sensor	1
11	Brine flow meter plug + cable	1
8	Dilution water solenoid plug + cable	1
9	Dilution water flow meter cable (M12, 4-pin, Code A)	1
9	Dilution water flow meter connector (M12, 4-pin, Code A)	1
17	250 Electrolytic cell assembly	1
17	500 Electrolytic cell assembly	1
17	1000 Electrolytic cell assembly	1
17	2000 Electrolytic cell assembly	1

11.4 Electrolytic Cell Acid Cleaning

WARNING



Chemical hazard

Mixing hydrochloric acid with sodium hypochlorite releases hazardous chlorine gas.

- Only authorised service personnel can perform acid cleaning.
- Check internal degassing column drain valve is open before starting CIP procedure to prevent acid being directed to the NaClO storage tank.
- Use effective PPE.



If the installed softening device fails or the wrong grade of salt is used, the electrolytic cell will become scaled. Scale reduces efficiency of the process and will eventually cause the EASYCHLORGEN T to enter a 'Voltage High' alarm state.

11.4.1 Acid Cleaning Notes

- Repeated acid cleaning will damage the electrolytic cell and reduce overall operating life, always seek to rectify the cause of scaling before putting the EASYCHLORGEN T back into operation.
- Never remove the electrolytic cell from its casing, this will void warranty.
- Use the CIP (Cleaning In Place) connections provided on the skid to perform the acid cleaning, take note of the inlet/outlet labels.
- Use a pump to circulate acid through the system, flow rate should be between 20-60L/min.
- Minimum volume required to fill internal EASYCHLORGEN T CIP loop = 35L.
- Only use hydrochloric acid with a concentration between 5-10%.
- Do not leave the electrolytic cell in acidic solution for more than 10 minutes to prevent damage to the electrodes.
- Acid cleaning can be performed automatically at set time intervals. Contact the operator for more information.

11.4.2 Acid Cleaning Kit

A cleaning kit can be ordered as an optional accessory.

Kit contents:

- Acid pump
- Acid cleaning tank
- Connectors for all EASYCHLORGEN T electrolytic cells
- Hoses for electrolytic cells and pump connections

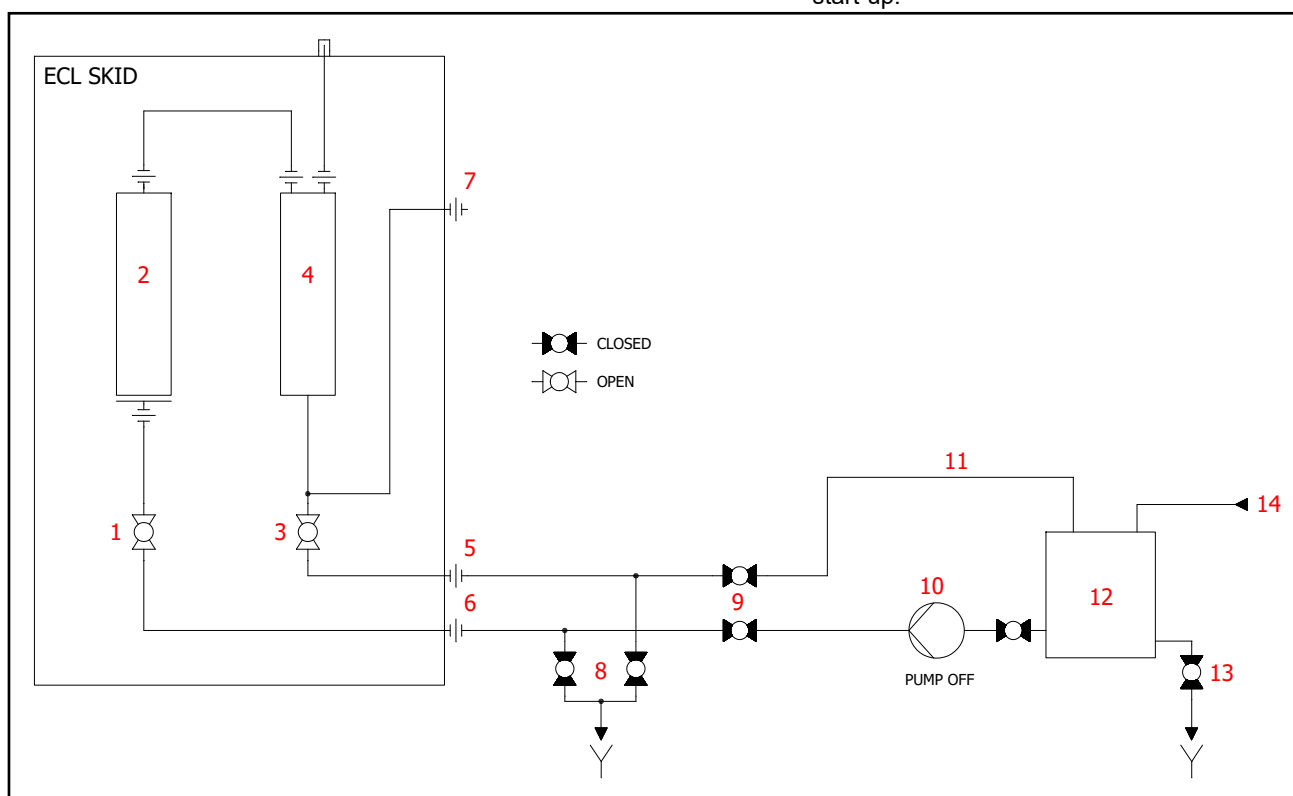
11.4.4 Example of Acid Cleaning Procedure

Notes:

- Acid cleaning procedure may vary depending on the installation and cleaning equipment being used. The diagram shows a fixed CIP installation with manual operation.
- CIP return line [11] to the CIP tank [12] is below the EASYCHLORGEN T product outlet [7] to prevent acid being directed into the skid or product storage tank.
- Degassing columns drain valve [3] is always open to prevent acid being directed to the product outlet [7] and into the NaClO storage tank.
- CIP tank [12] is sized to contain enough liquid for the CIP circulation after filling the electrolytic cell and associated pipework.

Manual Acid Cleaning Procedure:

1. Isolate power to the EASYCHLORGEN T by turning the switch disconnect to the off position.
2. Drain the electrolytic cell [2] and degassing column [4] by opening the internal and external drain valves [1, 3, 8].
3. Close the external drain valves [8] and open the CIP isolation valves [9].
4. Fill the tank [12] with water and flush the electrolytic cell using the pump [10] to remove all chlorine traces.
5. Drain the tank [12] via the drain valve [13] and then fill the tank with Hydrochloric acid (5-10% concentration).
6. Circulate the system with acid until scale has been removed and gas bubbles have stopped forming. Acid should not be in contact with the electrolytic cell for longer than 10 minutes.
7. Neutralise the acid in the tank and dispose of it according to local and site regulations.
8. Open the drain valves [8, 13] to empty the system.
9. Close drain valves [8, 13] and CIP isolation valves [9].
10. CIP complete - Prepare EASYCHLORGEN T for start-up.



CIP diagram 1. – EASYCHLORGEN T in normal operation

Tag	Description	Tag	Description
1	Electrolytic cell drain valve	8	External drain valves
2	Electrolytic cell	9	CIP isolation valves
3	Degassing columns drain valve	10	CIP circulation pump (20-60L/min)
4	Degassing column	11	CIP return line
5	CIP Outlet / Degassing column drain (1/2" / 20mm)	12	CIP tank (50L)
6	CIP Inlet / Electrolytic cell drain (1/2" / 20mm)	13	CIP tank drain
7	Product outlet	14	CIP tank filling

This log should be completed as regularly as possible to monitor EASYCHLORGEN T operation. Keeping records of this log is a condition of warranty.

[illegible]

*Measure hardness of water (<20mg/l CaCO₃) or use hardness Yes/No test tablets.

13 EC Declaration of Conformity



(DE) EU-Konformitätserklärung

Hiermit erklären wir, dass das nachfolgend bezeichnete Gerät aufgrund seiner Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der aufgeführten EG-Richtlinien entspricht. Bei einer nicht mit uns abgestimmten Änderung am Gerät verliert diese Erklärung ihre Gültigkeit.

(EN) EU Declaration of Conformity

We hereby certify that the device described in the following complies with the relevant fundamental safety and sanitary requirements and the listed EC regulations due to the concept and design of the version sold by us.
If the device is modified without our consent, this declaration loses its validity.

(FR) Déclaration de conformité UE

Nous déclarons sous notre propre responsabilité que le produit ci-dessous mentionné répond aux exigences essentielles de sécurité et de santé des directives CE énumérées aussi bien sur le plan de sa conception et de son type de construction que du modèle que nous avons mis en circulation.
Cette déclaration perdra sa validité en cas d'une modification effectuée sur le produit sans notre accord explicite.

(ES) Declaración de conformidad UE

Por la presente declaramos que, dados la concepción y los aspectos constructivos del modelo puesto por nosotros en circulación, el aparato mencionado a continuación cumple con los requisitos sanitarios y de seguridad vigentes de las directivas de la U.E. citadas a continuación.
Esta declaración será invalidada por cambios en el aparato realizados sin nuestro consentimiento.

(NL) EU-overeenstemmingsverklaring

Ondergetekende Lutz-Jesco GmbH, bevestigt, dat het volgende genoemde apparaat in de door ons in de handel gebrachte uitvoering voldoet aan de eis van, en in overeenstemming is met de EU-richtlijnen, de EU-veiligheidsstandaard en de voor het product specifieke standaard. Bij een niet met ons afgestemde verandering aan het apparaat verliest deze verklaring haar geldigheid.

(PT) Declaração de conformidade UE

Declaramos pelo presente documento que o equipamento a seguir descrito, devido à sua concepção e ao tipo de construção daí resultante, bem como a versão por nós lançada no mercado, cumpre as exigências básicas aplicáveis de segurança e de saúde das diretivas CE indicadas.
A presente declaração perde a sua validade em caso de alteração ao equipamento não autorizada por nós.

Bezeichnung des Gerätes:

Natriumhypochlorit-Generator vor Ort

Description of the unit:

On-site sodium hypochlorite generator

Désignation du matériel:

Générateur d'hypochlorite de sodium sur site

Descripción de la mercancía:

Generador de hipoclorito de sodio in situ

Omschrijving van het apparaat:

Natriumhypochlorietgenerator op locatie

Designação do aparelho:

Gerador de hipoclorito de sódio no local

Typ:

EASYCHLORGEN T 250 / 500 / 1000 / 2000 / 5000 / 10.000

Type:

EU-Richtlinien:

Niederspannungsrichtlinie / Low Voltage Directive (2014/35/EU)

EC directives:

RoHS-Richtlinie / RoHS Directive (2011/65/EU)

EMV-Richtlinie / EMC Directive (2014/30/EU)

Harmonisierte Normen:

NSR / LVD: EN 60335-1:2012+A2:2019

Harmonized standards:

RoHS: EN 63000:2018

EMV / EMC: EN 61000-6-2:2019

EN 61000-6-4:2019

EN 61000-4-2:2009

EN 61000-4-5:2014

EN 61000-4-6:2013

EN 61000-4-11:2020

Dokumentationsbevollmächtigter:
Authorized person for documentation:

Lutz-Jesco GmbH

Heinz Lutz
Geschäftsführer / Chief Executive Officer
Lutz-Jesco GmbH
Wedemark, 19.09.2024

Lutz-Jesco GmbH
Am Bostelberge 19
30900 Wedemark
Germany



Lutz Jesco GmbH

Am Bostelberge 19
30900 Wedemark
Germany

Tel.: (+49 51 30) 58 02-0

E-Mail: info@lutz-jesco.com

www.lutz-jesco.com