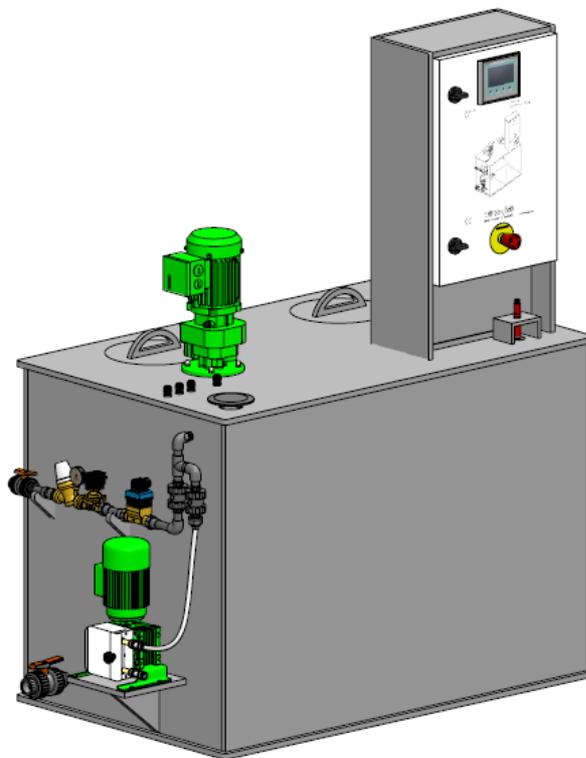


Kozegho

Kozegho dosing systems



Operating manual for continuous raw polyelectrolyte system

PolySys CL-D models

This document must be in consideration before commission and use the units

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1 > Introduction

This manual belongs to a owner and user of Polysys CL-D unit, that is a fully automatic polyelectrolyte solution preparation system. This final solution, ready to use will be obtained from powder by dilution in water.

Attended to a major field applications, as potable water treatment facilities, waste water plants and drying process, pulps and paper the CL units are design to prepare solutions from 1 to 5 ml/L

The necessary maturation time is ensured by classic 2 chambers tanks where the transition from one to other chamber occurs by the longest way. There is also a possibility to have a chamber for the concentrated raw polyelectrolyte, giving a 3 chamber configuration layout (CL-T models).

Because is a machine all intervenient users must be instructed personal that clearly understand all instructions included is this manual to avoid mal functions and/or personal injuries.

In market exist several different raw polyelectrolyte manufactures, each one with is one benefits and characteristics and for that the application results are totally independent of this machine. The system will just produce a clear diluted solution from these manufactures. The choice of emulsion supplier is the responsibility of users and Kozegho ensure that is totally independent of any one.

Attempt to different raw polyelectrolyte manufactures result in different physical characteristics and for that Kozegho recommends check all unit adjustments every time change the polyelectrolyte suppliers.

All local safety procedures and practices should be respect on the use of this machine that was manufactured under CE procedures.

2 > Check in



◆ 2.1 > Package

Attended at CL range specific sizes all units use palettes without standard dimensions. All units are covered by plastic film as a first protection. All fronts around pallet erect plastic walls with wood profile creating a surrounding protection cage that is efficient during transport and included in all shipments.

Under specific requests and with additional cost is possible packages in closed boxes built in wood for sea freight.

◆ 2.2 > Loading and discharge

Before starting any movements confirm you have suitable support to carry the total weight to ensure the integrity of all persons involved in the operation and equipment.

Prepare the place and ensure the easy way to avoid unnecessary movements until destination. Ensure the hosting platform can support the working weigh system.

These are irregular volume/weight structures and for that is recommended slow motion avoiding impacts and balances that can create some unexpected movements or damages.

Prior any movement ensures the unit is totally empty (water or poly solution in tank) and disconnected from water line and power supply.

Is recommended use a forklift with extension arms to support all hosting pallet avoiding unexpected movements.

Never use any part, component or equipment point as a lifting lug to suspend the unit with cranes or any other suspension devices. Is totally forbidden walking or parking under suspended weights with risk of severe injuries.

◆ 2.3 > Reception

For a good reception of this equipment, strongly recommend a first visual examination to confirm the packages are not damage in any fronts or nay others obvious impact signals.

If detect any rupture in external cover package happened during transport please confirm if there is any effect in the

equipment's to appoint that in forwarder documents ensuring an easy and efficient claim if in case.

Check the documents if corresponding with your order, confirm the package is really dressed to you and fit with volume.

◆ 2.4 > Storage conditions

Mechanical equipment's reduce is working live when storage during long terms. Just extend the storage time if really need and under next conditions.

Local Temperatures must be between 0 and 40 °C

Humidity will promote corrosion in metallic parts and for that unaccepted.

Sun light not recommended

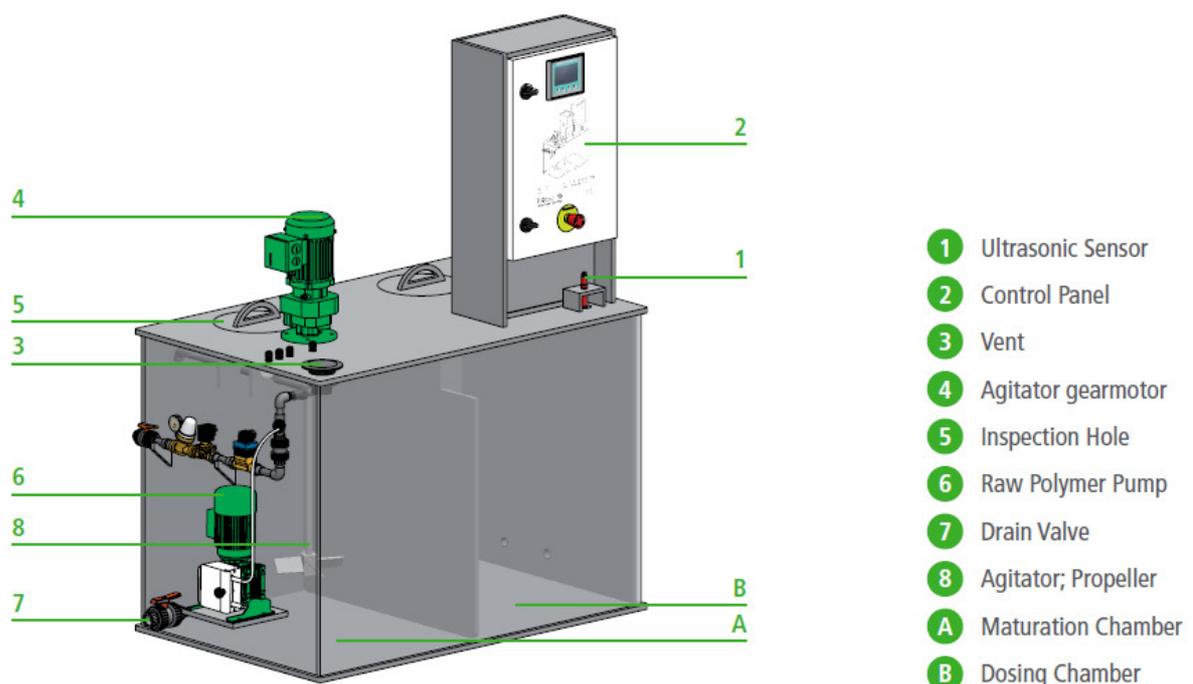
Dust not recommended

The plastic cover from factory is effective during short term and is not appropriated for long storages

Damages and malfunctions by storage conditions not covered by warranty.

◆ 2.5 > Conference

As a first contact with CL units request take a few minutes for visual quick confirmation that received unit is similar at below drawing including model reference and all described main components.



3 > Polysys overview.

◆ 3.1 > Description

The Polysys is a fully automatic polymer preparation unit and not suitable for others raw polymer dilutions unless clear agreement of Kozegho

Using a traditional overflow two chambers configuration, provide a very high quality final solution free of lumps and requested concentration.

Measuring the level in the dosing chamber is easy monitories the start and stop preparation batch provide a continue dosing system.

Using only very high quality and recognize brand components and sensors Kozegho warrant a long live and easy maintenance equipment's.

The HDPE 100 used to build the main structure give a robust and very attractive finish to these units.

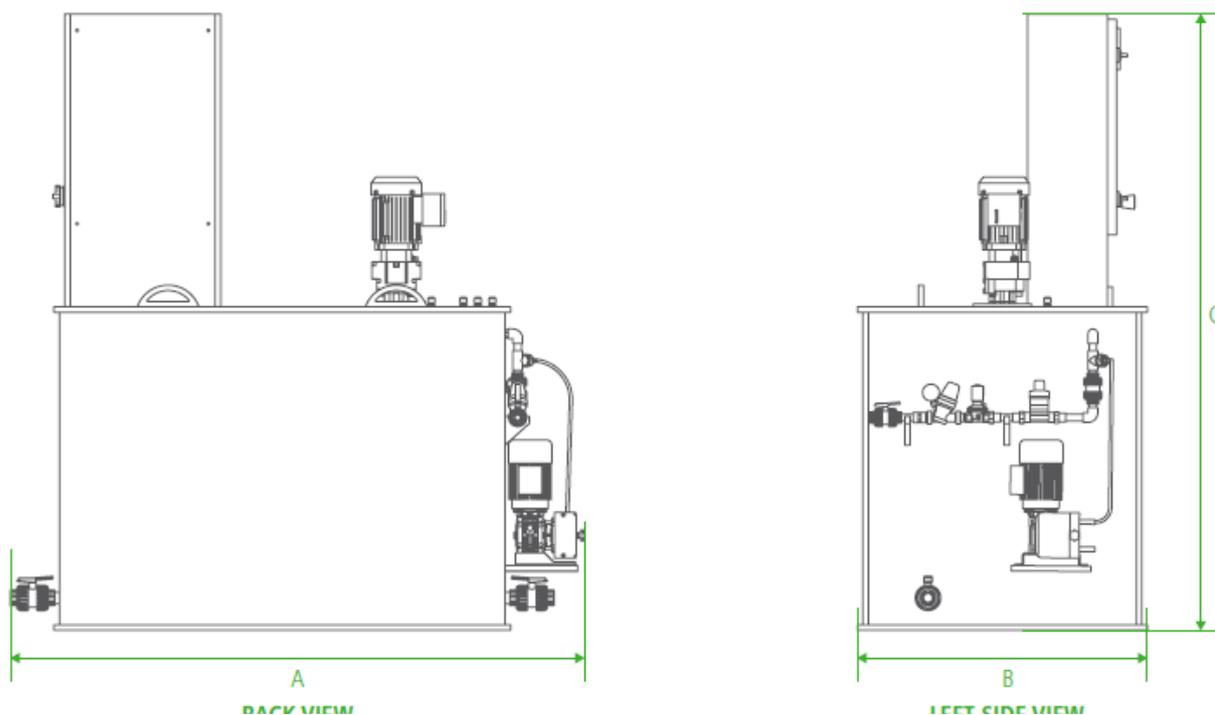
One or more optional mixers built in 316 SS and powered by low speed motor drivers confer a good mixing at the same time low shaking to avoid damage on sensible polymer structures.

Very high accuracy dosing pump confers a good dosing performance to reach the most exigent chemical process requirements.

An electrical panel built with Siemens components and a frontal HMI display to ensure a perfect interaction with user on friendly selection menus to provide easy and quickly configurations to everyone's.

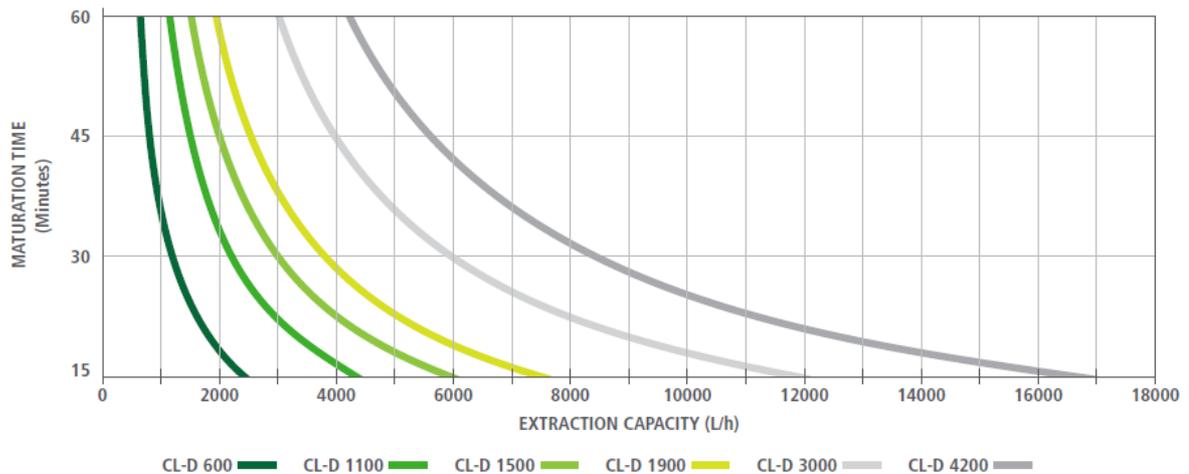
◆ **3.2 > Technical Data**

The following table reproduces the technical data for CL models range and is subject at regular review to increment the unit's performance that can cause changes without prior notifications.



TECHNICAL SPECIFICATIONS						
	CL-D 600	CL-D 1100	CL-D 1500	CL-D 1900	CL-D 3000	CL-D 4200
Total Volume L	600	1100	1500	1900	3000	4200
Length as A	1650	1900	2400	3000	3000	3600
Width as B	800	1000	1000	1000	1210	1500
Total height as C	1700	1800	1800	1800	2010	2300
30 minutes capacity	1200	2200	3000	3800	6000	8400
60 minutes capacity	600	1100	1500	1900	3000	4200
Water connection DN	20	20	25	25	25	32
Max. Water flow L/h	1400	2600	3600	4500	7200	11000
Dosing connection DN	25	25	25	32	32	40
Total rate kW	0,5	0,6	0,6	0,8	0,8	0,8
Power supply	3pH + N	3pH + N	3pH + N	3pH + N	3pH + N	3pH + N
Voltage V	400	400	400	400	400	400
Dosing pump rate kW	0,18	0,18	0,18	0,18	0,25	0,25
Mixers motor kW	0,25	0,37	0,37	0,55	0,55	0,55
Speed rpm	148	150	150	158	158	158
Propeller Diameter mm	200	350	350	500	500	500

EXTRACTION CAPACITY AS A FUNCTION OF AGING TIME



4 > Structural parts

◆ 4.1 > Preparation tank

The storage tank is the main support for all other components and is built in HDPE as a default material because it presents a high chemical long-term resistance, very good structural performance, is naturally UV protected in case of outside erections, and has better sunshine tolerances compared with other plastics.

Inside divisions provide a two individual chamber connected by overflow principles to ensure the residence of fresh polymer in the first chamber at the same time with the matured solution, ready for use in the last compartment.

An electrical panel case, located on the top (small units) or supported on the side wall, protects all components at the same time and permits a good access to the user interface to set up any parameter.

Welded side connections provide easy assembly without frontal or back space disturbances. All connections are fitted with corresponding PVC ball valves.

Three top lids, one for each chamber, permit a good access in case of assistance to internal elements and quick visual inspection.

Top cover transversal reinforcements installed on the interior side support mixer loadings and prevent long-term deformations.

In larger models, additional stainless steel ring reinforcements covered by HDPE introduce additional structure and robust

◆ 4.2 > Dosing Pump

Two options of dosing pump types: peristaltic pump driven by a frequency converter, or a membrane pump that is controlled directly from the PLC by an analogue signal.

The peristaltic motor pump doses the raw polymer squeezing the hose in the direction of the flow. This pump type doesn't required any valves to ensure the dosing, giving a simple operation and a simple maintenance as well.

The membrane pump uses a high viscosity hydraulic setup, using for that job both valves and dosing head specialized in high viscosity fluids. This pump type allows the operator to adjust the dosing with the incoming signal from the PLC, giving the ability to restrict or maximize the flow rate of the pump until the minimum and maximum of the pump itself. Generally the maintenance of this pumps are more complicated than the peristaltic, as more parts are connected to the fluid.

◆ 4.3 > Feed water line

The water entrance is controlled by 24 VDC solenoid valves that open when the level in last chamber touch in minimum and stops at total filling point. As all orifice solenoid valves, just operates with clean water to avoid blockings by sand grains or other small particles and necessary ensure a minimum pressure (2 bars at least) to help the solenoid to open.

To help control the pressure, avoiding drastic changes in entrance flow exist a pressure regulate valve with manometer to adjust at fix operation pressure.

The water flow is measured by a frequency pulses flow meter connected to PLC on control panel. This meter will permit the right proportional adjustments in powder feeder frequency converter to prepare the right concentration of polyelectrolyte.

◆ 4.4 > Mixers

The mixers installed in first chamber is standard with shaft and propellers build in stainless steel.

A low speed motion and high flow propellers provide a good dilution and homogenization. As a long chain structures the polyelectrolytes require at same time slowly but strong and power mixing to ensure a growing environment.

The mixer working routine can be programmed in control panel for *sleeping* periods. When starts a new refilling the mixers

always working at least 60 minutes but after this time, can enter in routine stats/stop to save energy determined by operator.

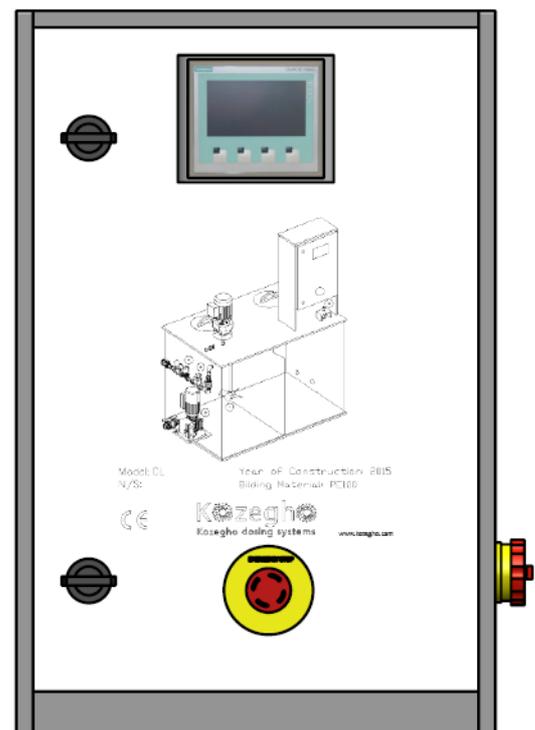
◆ 4.5 > Control panel

All control and operational components are protected inside control cabinet, as Siemens S71200 PLC, frequency converter to control dry feeder unit, power supply, individual circuit breakers for each motor and other minors.

Include a general circuit breaker to switch On/off the machine and frontal push bottom to stop all operation in case of emergency

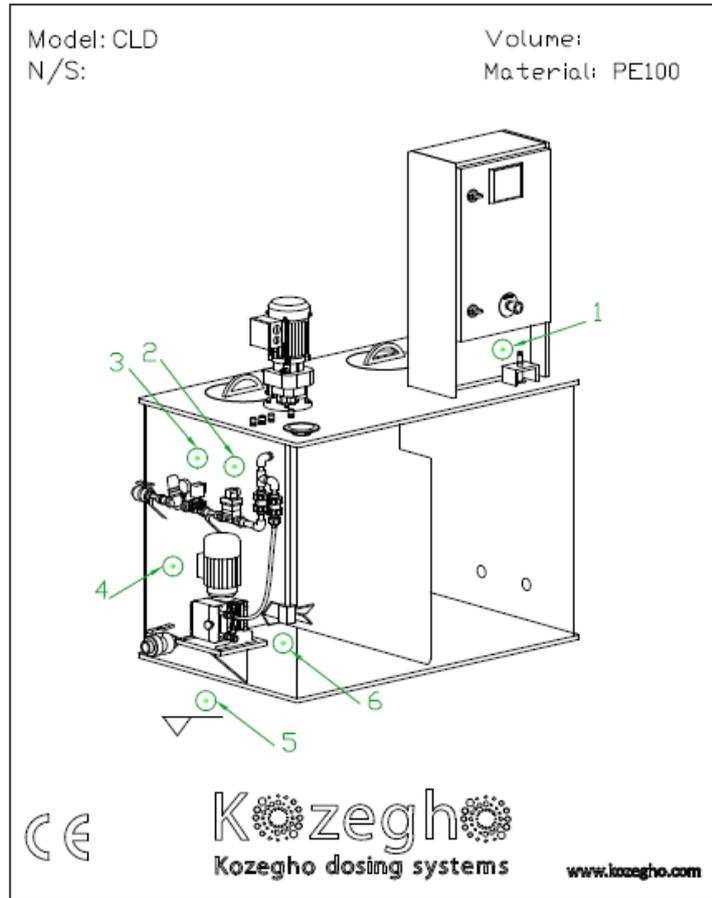
In front doors is the led's synoptic panel and touch display Siemens that control all parameters and will be mention in this manual in other chapter.

All listed structural parts are electrically connected in panel as a compact unit prepared to working under plug and play principle.



◆ 4.6 > Sinoptic description

To provide a simple and intuitive vigilance Kozegho supply the following synoptic panel:



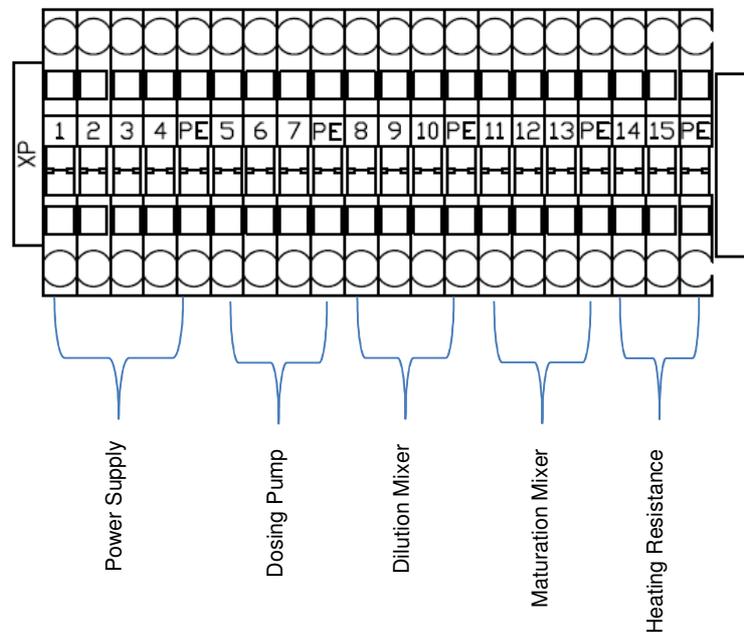
Position	Name	Green	Red	No Light
1	Prepared Tank Level	Level OK	Level Alarm	NA
2	Water Flow	Flow OK	Flow Alarm	Solenoid Valve Closed
3	Solenoid Valve	Valve Open	NA	Valve Closed
4	Dosing Pump	Running	Alarm	Not Working
5	Emulsion Level	Level OK	Low Level	NA
6	Maturation Mixer	Running	Alarm	Not Working

◆ 4.7 > Terminals map

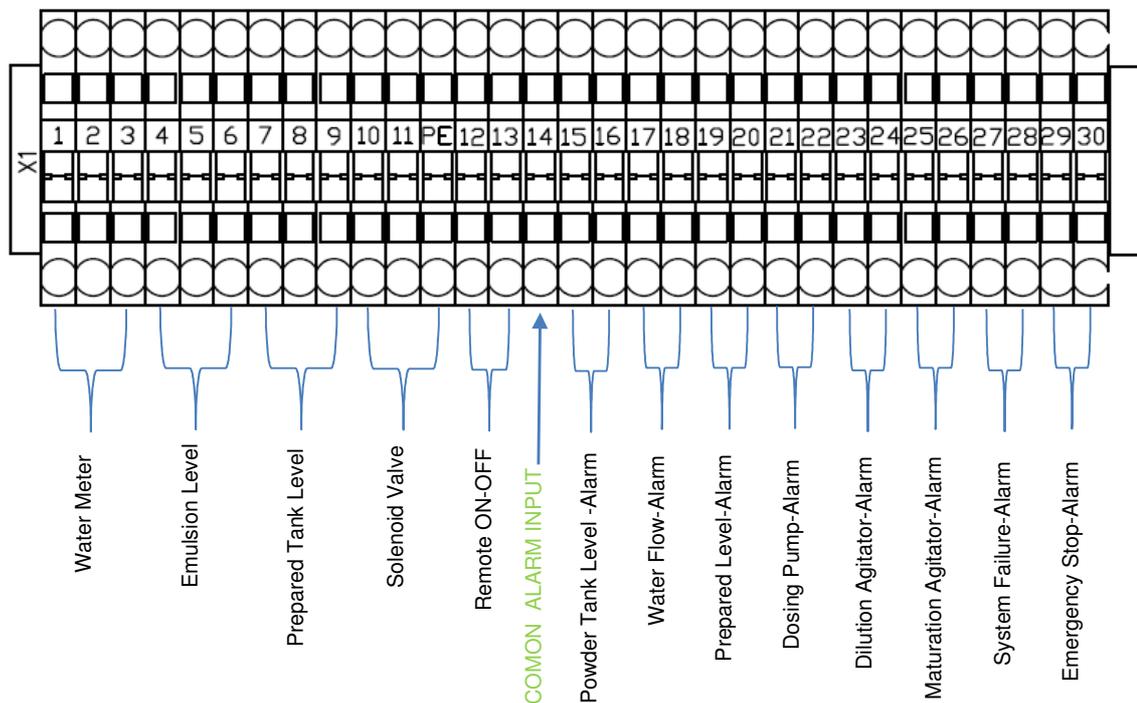
All listed structural parts are electrically connected inside the panel as a compact unit prepared to working under plug and play principle.

To install the machine is just connect the power supply line and optional alarms as the following terminal map. For more information about the connections, consult the electric scheme sent with the unit.

Power Connections



Command Connections



◆ 4.8 > Other parts

The level in last chamber is continually monitored by an ultrasonic sensor that transmits a signal proportional to liquid height. Permit display the level on the screen and control the starting level and alarms.

The breathing cone is useful to leave the air flow outside the unit when the water enters during preparation to avoid clouds of polymer that blind the Plexiglas window.

5 > Installation

Polisys line was developed to be easy and fast installation. All necessary parts are delivered with machine under complete skid principle. In any case is recommendable to be manipulated only by experts to avoid unexpected occurrences.

Prior any hydraulic or electrical connections must be ensuring the unit is stable on flat and enough robust surfaces for working conditions.

After parking the unit, ensure easy access to all sides and components for future routine maintenance.

◆ 5.1 > Hydraulic guide lines

First of all should be connect the water and ensure there is no leakage. The water must be free of solids as drinking water quality at least 3 bars pressure with available necessary flow to provide a good working performance. Recommend a pipe upper size than installed in the unit.

Connect and confirm drain line at least one size bigger than water supply. Confirm the drain collector is suitable for this purpose to avoid environmental injuries attempt to polymer characteristics.

If is the case install the overflow manifold at least one size bigger than water supply

◆ 5.2 > Electrical guide lines

Ensure the switch protection is off and connect the 3 phase wires as electrical drawing supplied with this manual. Confirm select the right cable to support the necessary power rate for your machine. Ensure the available voltage rate in plant is according to the electrical drawing to avoid damages on circuits. Just after close the cabinet, switch the emergency selector to On position and proceed with next check list.

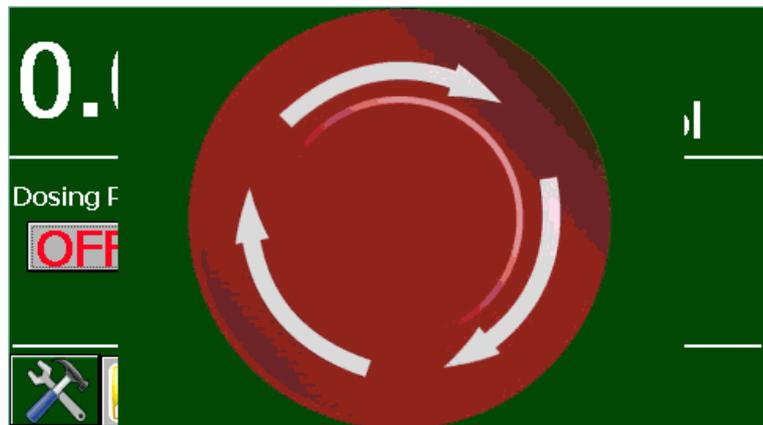
- ❖ No strange occurrence or noises in components.
- ❖ Led's, hopper sensor, synoptic led's and display are lightning
- ❖ Check one by one, the mixers motors are running clockwise without any noise, vibration or other
- ❖ Check the Dry feeder motor is running clockwise without any noise, vibration or other and the screw movement without restrictions.
- ❖ After some minutes working without any strange situation, confirm the current is according data.

6 > User interface

PolySys units are managed through Siemens 4" touch screen display presented on electrical panel frontal cover. The intuitive menus offer a user friendly selection.

All following points will be very useful to operate the unit and understand some automatic procedures that will occur during running mode.

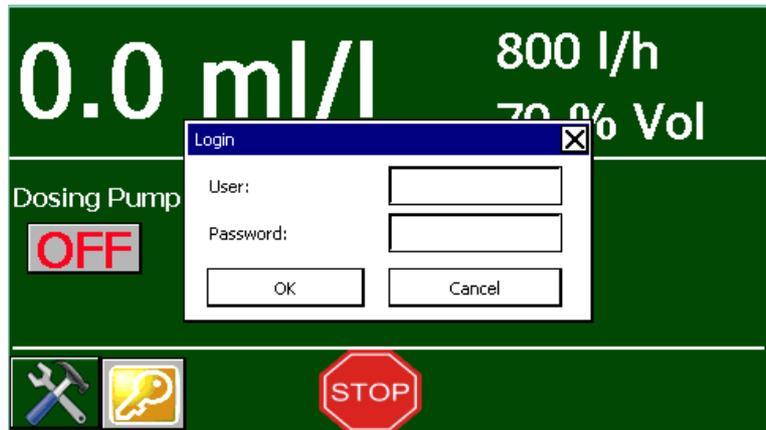
If emergency bottom is pushed access to any menu is restricted as show.



◆ 6.1 > Password

All configuration menus are protected by password that will be requested to change any parameter. Log out mode only permit main screen display.

To introduce the user and password will be necessary touch in the correspondent place that will open a virtual keypad to select the right numbers or letters. The user must be careful with caps lock carters.



◆ 6.2 > Parameters setting

This will be the **departure** menu to access to all other necessary managements selections to working properly with Polysys units. The access is made in the main menu in the tool button located in the bottom left corner.



The user will found mainly 2 general blocks from configuration screen.

- ❖ System Menu – For general adjustments
- ❖ Control Menu - Setup all working adjustments

Also is showed the model, serial number and software version of the machine.

◆ 6.3 > System menu

In this menu user will adjust some local settings

The user can adjust language touching in correspondent flag.

The procedure to adjust the Date and time is just touching in the display field and after open a virtual keypad is possible change for local settings.

One button to calibrate the HMI screen when detect the response position is not accurate with touch field. This should do it only by experiment personal.

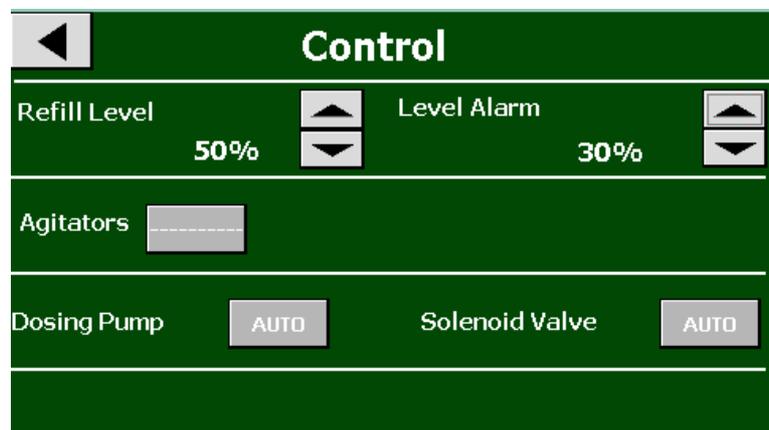
There is two buttons used as local interface with PLC just in case of any necessary procedure directly in this unit, only recommended for experiment personal.

Left arrow for back to control menu



◆ 6.4 > Control menu

All adjustments related with process it self are selected in control menu as follow.



The **refilling level** is the level that starts the preparation cycle and can be selected in this menu. Is possible increase or decrease the factory setting level with arrows.

This cycle stops in any case in 100% and is not possible to change

The **level alarm** is the level that switches the alarm level after 30 Sec. and can be selected in this menu. Is possible increase or decrease the factory setting level with arrows. In running mode if the unit reaches this Level alarm will enter in safety stop that will turn of the solenoid valve and dry feeder to check any abnormality in the process. At this time will be necessary direct intervention from user to stat the automatic process again.

The agitators, by default, work in continues mode and never stops but in some cases where the user found a rezone to working in intermittent timer mode is possible select this cycle as follow.



The arrows will be used to increase or decrease the On and OFF timers.

This timer selection doesn't affect the preparation cycle where the mixers always works during 60 minutes when new water powder enter in the unit, independently the actual mode running time.

The last field in control menu is used to switch the dosing pump working mode between manually and automatic, as well the solenoid valve that will change the appearance in main screen to inform the user about this manual selection.

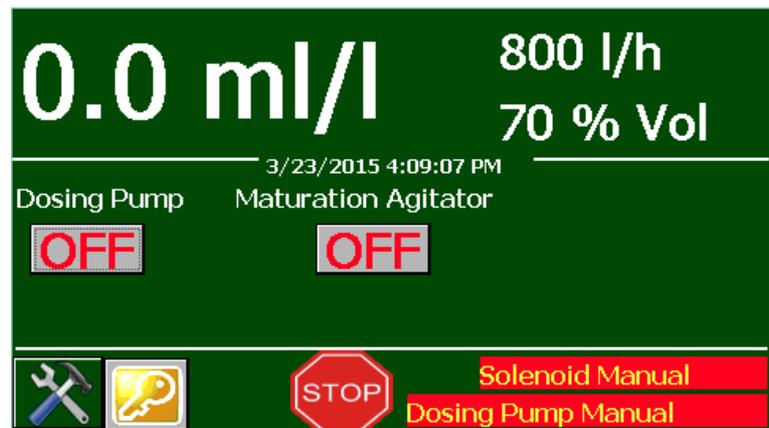
This buttons will be useful when the unit trigger level alarm to recover the conditions to work in continues mode

6.5 > Main screen

This is the most recommendable screen to be selected during working process because the users have all relevant information just in one intuitive screen

On the top field screen, user will found the most relevant parameters to prepare the Polymer solution.

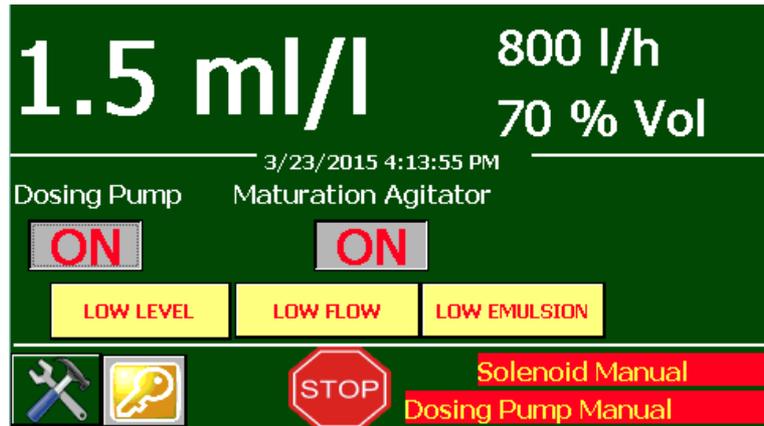
Concentration solution can be changed pressing the value field to select a new value, where the operator is guided in to other menu



Flow and Volume is just for information and these values are indicated by flow meter installed in water line and ultrasonic level installed in last chamber.

The middle field screen is used as a buttons area to change the working mode of all electro mechanic devices as mixers and dry feeder. Just pressing the buttons will be very easy to change the state On/OFF.

Above the electro mechanical buttons is an advising zone that is expected free of alarms in normal conditions. If the last chamber level reaches a critical value, the unit will be stopped and will trigger the **low level** alarm. To restart the unit will be necessary a user direct intervention to confirm all correct working conditions and acknowledgement procedure pushing the Low level button. If this procedure detect any abnormality can be stopped, pushing again the same position button actually with distinct aspect.



The **high flow and low flow** alarm means the unit is working out of range conditions that happen because the high or low water flow will be impossible working with selected concentration. Water and powder entrance will be stopped until the user confirm adjust the flow or/and concentration for possible combination.

The **Emulsion level** alarm appears when the level sensor , confirm inexistency of emulsion and just advise the user to refill it. In any case, continues preparation process will not be stopped by this alarm.

On CL-D models this alarm is a contact on the panel that is connected with a shunt (see electrical connections)

This contact is to plug a level sensor, if want to, in the emulsion container, and is an optional sensor that is installed by the customer.

Any sensor that performs the job, is allowed to be used, just ensure that the electrical specifications are met.

Kozegho is not responsible for the installation and his malfunction.

A short circuit caused in the system by this sensor is not covered by warranty.

◆ 6.6 > Calibration \ Concentration menu

To change the concentration value press up and down buttons on the concentration selection.

In calibration section, the operator can check the last calibration results and perform a new one, by pressing the **New Calibration** button.

The calibration process is one of the most important steps in all process to permit a good accuracy in final polymer solution concentration. For that reason this procedure is recommended each time that change the raw polyelectrolyte origin (type,

supplier or manufacturer) or when the environmental (humidity, temperature, weather conditions in general)

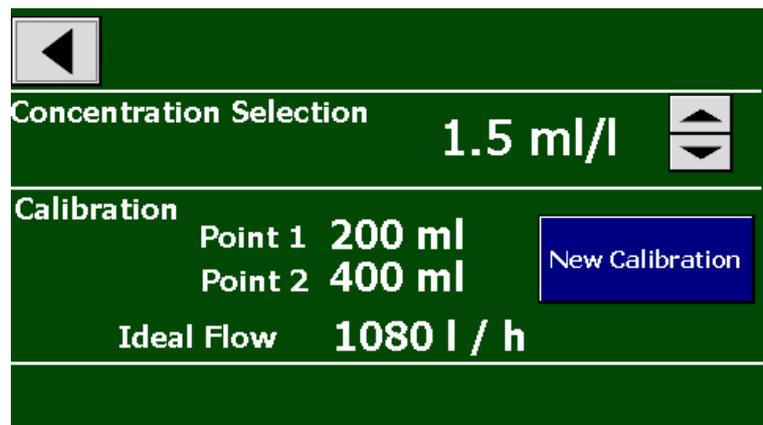
All procedures will be controlled by internal PLC where the user just needs to follow the instruction showed in display

This calibration will run the dosing pump in two different points in range of speeds to create a curve that will base the dosing calculations. These two points are internally selected from factory thought speed inverter.

To proceed with calibration is necessary a pot enough size to recover the raw polyelectrolyte during 5 minutes dosing at maximum capacity of the unit and an ordinary scale to get the weight to introduce in each calibration point.

Prior calibration, confirms continues dosing turning on the dosing pump in manual mode.

The calibration menu give immediately access to last calibration results as a possibility to proceed with new calibration.



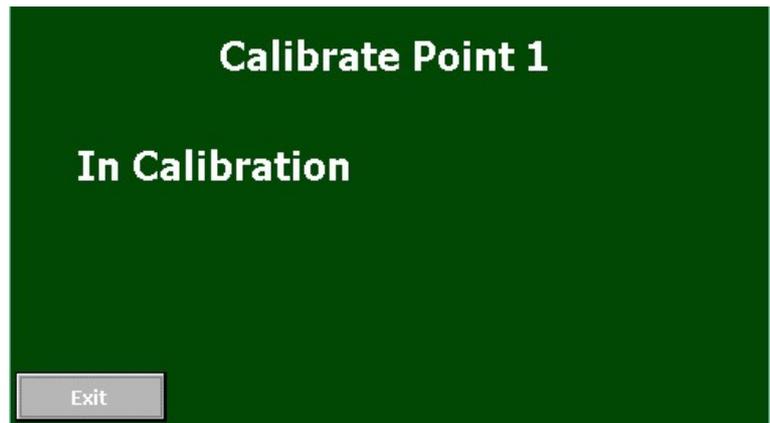
The ideal flow, is a recommended flow, theoretical calculated that permit select any concentration in range from 1 ml/l to 5 ml/l

Is possible exit from calibration procedure pushing exit button.

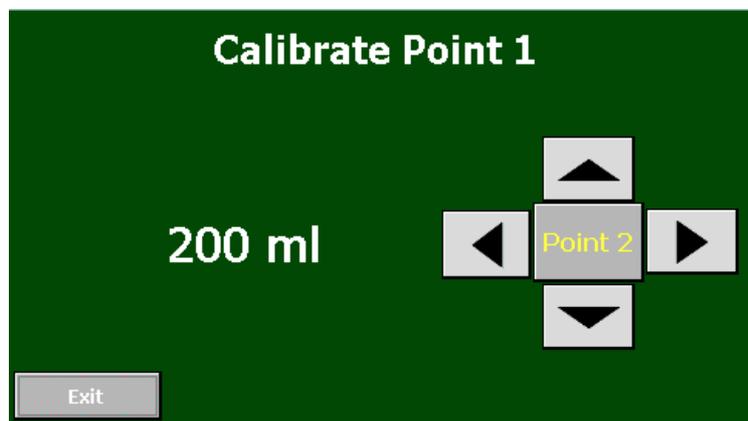
When push **new calibration** button will start a new calibration procedures.

At this time is necessary recovering the polymer to measure the amount of solution in an ordinary scale during the 5 minutes cycle.

During this timer period the screen will display the following.



After 5 minutes is necessary introduce the solution dosed value in the next screen using the arrows.



Pushing **point 2** button will start the same procedure for second point of calibration.

On the end of second point, just push the exit button on the left side to record all values and go back to main screen with new calibration values drawing the dosing curve adjusted at actual working conditions.

7 > Start up

After all installation procedures to operate in continues mode is time to start up Polysys unit.

Confirm all drain valves are closed and you have a possibility to drain the unit just in case.

Select the solenoid valve in manual and checking the flow to confirm is in range of unit capacities. Close and open two or

three times the valve to confirm a good response. Leave the valve open until filling the dilution and maturation chambers

With solenoid valve closed, Check the water pressure in the manometer and confirm is between 3 – 5 Bars

Confirm the dosing pump head is filled with raw polyelectrolyte, running the pump in manual until the fluid passes through the dosing head without air.

Select the calibration menu to proceed with the first dosing pump calibration avoiding error/fault messages during start up process.

Start the mixers one by one if already have water covering at least half shaft and confirm a vigorous mixing performance.

Select the desired concentration to be prepared in the unit.

Wait the solenoid valve in manual mode until the level in the last chamber is higher than selected alarm level and then push the button to start automatic.

From now the dosing pump will start dosing automatically the raw polyelectrolyte to reach selected concentration.

Dosing or draining the first diluted solution to repeat the refilling cycle several times until replace all water by concentrated polyelectrolyte solution.

At this point, verify if the starting and stopping cycle level is correct, test the alarm level closing the water live valve, test shutoff button, test the emergency push button and confirm all alarms signals.

8 > Maintenance recommendations

Maintenance is always a discussing subject because from the manufactures point of view is recommended a defensive program some times not practice on the opposite way the user that expect everything woks always in preference without maintenance programs.

In next lines some recommended procedures that should be adapted to working regime, local law, stops tolerances, weather and environmental conditions for each installation.

The right frequency for each maintenance operation should be founded as operator convenience and practice after some time using the unit.

◆ 8.1 > Preparation tank

The Polyethylene tank doesn't require any maintenance; just recommend keep it clean from polyelectrolyte powder and general vigilance for any structural deformation or leakage.

In case of drastic temperature changes can occur permanent deformations.

Clean the surface just with water or alcohols based detergents free of solvents.

◆ 8.2 > Dosing Pump

Check frequently for any strange noises or vibration, and confirm continuous flows when in operation.

Confirm the cooling fan protection is clean, moves when motor runs and maintain an acceptable temperature (warm at touch but supportable)

Looking for oil marks or leakages on driver motor joints.

On peristaltic pump is strongly recommended change the dosing tube before 1500 h working time avoiding a rupture that will cause chemical leakage inside of the pump body.

Driver without any lubrication plan during all working life. Looking for oil marks or leakages on driver motor joints.

In case of rupture confirm not damage the pump but must be cleaned before running again.

Tubing replacement will take 10 minutes and is not expensive and for that recommended keep it in stock and follow prior recommendation.

On Membrane Pumps is recommended to clean the hydraulic parts periodically with water. Dosing head, diaphragm and head valves must be disassembled to ensure a good cleaning procedure.

For more information's regarding the pumps maintenance, consult the instructions manual of the specific pump that is running.

◆ 8.3 > Feed water line

Clean frequently the filter to warrant a good flow of clean water, just removing the insert cartridge. Even with drinking water quality will accumulate some particles that must be removed.

Check the pressure gauge indication is correct and in case of failure replace integrally for other complete peace.

The solenoid valve is one of the most important parts to ensure a good machine performance and for that must work in perfect conditions. Even with filter will accumulate some small sand particles in diaphragm housing orifices and form that must be cleaned. Switch of the electrical panel and close the ball valve, remove the connector and the four screws to open the valve body, check the integrity of diaphragm clean with current water inside valve body and reassembling all again.

The flow meter is a paddle wheel device and don't need any maintenance unless any solid broken the paddle that must be replaced.

◆ 8.4 > Mixers

The mixers are the “biggest workers” in all machine because need to work continually or at least frequently and for that a special care.

Verify regularly the fastening screws motor-driver to the tank

Check frequently for any stranger noises or vibration in motor drivers when in operation and for oil marks or leakages on driver motor joins.

Drivers without any lubrication plan during all working live

Confirm the cooling fan protection is clean, moves when motor runs and maintain an acceptable temperature (warm at touch but supportable)

Open the inspection cover and confirm a good mixing. Stop the mixers checking the shaft and propeller is fastened without warped.

◆ 8.5 > Shut off valves

Check body integrity and free of leakages. Replace joins and seals in case.

Test the valves performance open and close it regularly.

◆ 8.6 > Control panel

Control panel is all time visual checking by operator and machine itself by operation but time to time is recommended a double check.

Check all cables right fastened in terminals because natural vibrations on machine can loose the contact and origin failures.

Change manually the working state for all components with representation in synoptic to switch led's colors and confirm with colors map that are working properly.

Check the same way the existing alarms and confirm the state switch in correspondent terminals.

Keep frontal door closed and synoptic clean.

◆ 8.7 > Ultrasonic sensor

Ultrasonic sensor measures the level by distance to liquid and for that is very important keep its surface always clean. Some times is possible some humidity in surface create several misunderstandings in PLC with possible wrong instruction to refilling and alarms and so on.

Confirm a good measurement opening the inspection lids and check the cycle and alarm levels programmed in touch panel corresponding to measured levels.

9 > Troubleshooting

◆ 9.1 > Display faults messages

Those faults that are monitories by sensors or others can be displayed in electrical panel touch screen with correspondent switch colors changes in synoptic and can be understand and solved as follow.

❖ **Low Level** message in touch screen and **Led n° 1 color red**

The level in last chamber fallow below alarm level

- Confirm upstream valve is open, problems in water supply, enough water pressure and the water flow is bigger than extraction flow.

- Confirm the solenoid valve in fact open when receive the instruction from PLC. Select the automatic manual valve operation in touch panel.
- Adjust the pressure regulate valve for lower setting pressure increasing the water flow.
- Check for leakages in tank structure or in the valves and the drain valves are closed.
- If, in fact, the level is higher than alarm level, can happen a default in ultrasonic level. Clean the surface sensor and/or confirm the electrical wire connection and test.
- If the problem persist recommend replace the sensor.

❖ **Emulsion level** message in touch screen and **Led n° 5 color red**

The emulsion level is below minimum level.

- Refilling the container with raw polyelectrolyte
- Confirm the electrical wire connection

If the problem persist recommend replace the sensor.

❖ **Low flow** message in touch screen and **Led n° 2 color red**

The main water flow is lower than minimum admissible to ensure range concentrations automatic selectable.

- Confirm upstream valve is open, problems in water supply, enough water pressure.
- Confirm the solenoid valve in fact open when receive the instruction from PLC. Select the automatic manual valve operation in touch panel.
- Clean the solenoid valve as described in maintenance chapter
- Check obstructions in the flow meter. Open and clean it carefully because the paddle wheel is a sensible measurement device.
- If is damage replace the paddle wheel or in extreme cases all flow meter body.
- Adjust the pressure regulate valve for lower setting pressure increasing the water flow.
- Check the flow meter wire connections
- Increase the desired concentration

❖ **High flow** message in touch screen and **Led n° 2 color red**

The main water flow is higher than maximum admissible to ensure range concentrations automatic selectable.

- Adjust the pressure regulate valve for higher setting pressure reducing the water flow.
- Close partially the upstream shut off valve to increase a head losses decreasing the flow
- Check malfunctions or damage in flow meter sensor, replacing the paddle wheel or in extreme cases all flow meter body.
- Check the flow meter wire connections
- Decrease the desired concentration

◆ **9.2 > Sinoptic faults messages**

The synoptic led's color codes give to operator an intuitive way to check the main parts working. Red color means an alarm and can be understand and solved as follow.

❖ **Led n° 2** and low flow or high flow message in touch screen

Read **Low Flow** and **high Flow** in point 9.1

Is normal led not alight when the solenoid is open. If happen in other situation Check the wire connections or change the Led

❖ **Led n° 6**

Maturation mixer motor thermal protection actuated.

For any rezone the current rate protection actuate and the work developed by motor is higher that specifications.

- Restart the contactor and confirm the motor is running. In case of trigger again should be tested as follow to confirm if replacement necessary.
 - Measure the current rate and check is according with specifications on manufacturer label
 - Check for any abnormality as lubricant leakage or high temperature motor,

- If the viscosity is much higher than expected (max. 1500 cp)
- Cooling fan is clean and working properly
- Confirm the electrical wire connection and is really powered with three phases.
- Check the clockwise rotation sense.

Is normal led not alight when the motor is switched off. If happen in other situation check the wire connections or change the Led

❖ **Led n° 5** and Emulsion Level message in touch screen

Read **Emulsion Level** in point 9.1

Check the wire connections or change the Led If is not alight

❖ **Led n° 4**

Dosing Pump thermal protection actuated.

For any rezone the current rate protection actuate and the work developed by motor is higher that specifications.

Restart the contactor and confirm the motor is running. In case of trigger again should be tested as follow to confirm if replacement necessary.

- Measure the current rate and check is according with specifications on manufacturer label
- Check for any abnormality as lubricant leakage or high temperature motor,
- Any blocking on dosing screw movement
- Cooling fan is clean and working properly
- Confirm the electrical wire connection
- Check the clockwise rotation sense.

Is normal led not alight when the motor is switched off. If happen in other situation check the wire connections or change the Led.

When using a membrane pump check the power supply connections, command connections and if any fault message is displayed. For more information, consult the instructions manual of the pump

❖ **Led nº 1 color red**

Read **Low Level** in point 9.1

Check the wire connections or change the Led If is not alight

◆ **9.3 > Other occurrences**

❖ **No power**

- Check if have current in terminals of main cable power supply
- Confirm the main switch selector on right side of electrical panel is ON
- Check main cable connection

❖ **No lights and no screen**

- Check the 24 VDC power supply and replace it if necessary
- Check the screen cable connection

❖ **Motors**

- Not runs
 - Confirm if central push bottom is not pushed. In case reset it
 - Confirm the thermal position inside the panel is ON
 - Check the mixers timer configuration and check if is in off time. In case just wait for On time or new cycle
- Overheating
 - Confirm good performance of cooling fan on back side of motor. Clean it or replace the fan and cover in case.
 - Looking for Lubricant leakages. Replace the driver
 - Check the presence of three phases and correct if in case
 - Verify the viscosity in case of mixers. Reduce concentration.
 - Verify is the screw is stuck in case of dry feeder. Clean the dry feeder and extraction tube without water.

- Noises

- Problems in drive mechanisms and bearings. Replace the drive unit
- No lubricant. Replace the drive unit

❖ **No mixing**

- Confirm if motor is running
- Open the lids and confirm the propeller and shaft is fastened on motor shaft

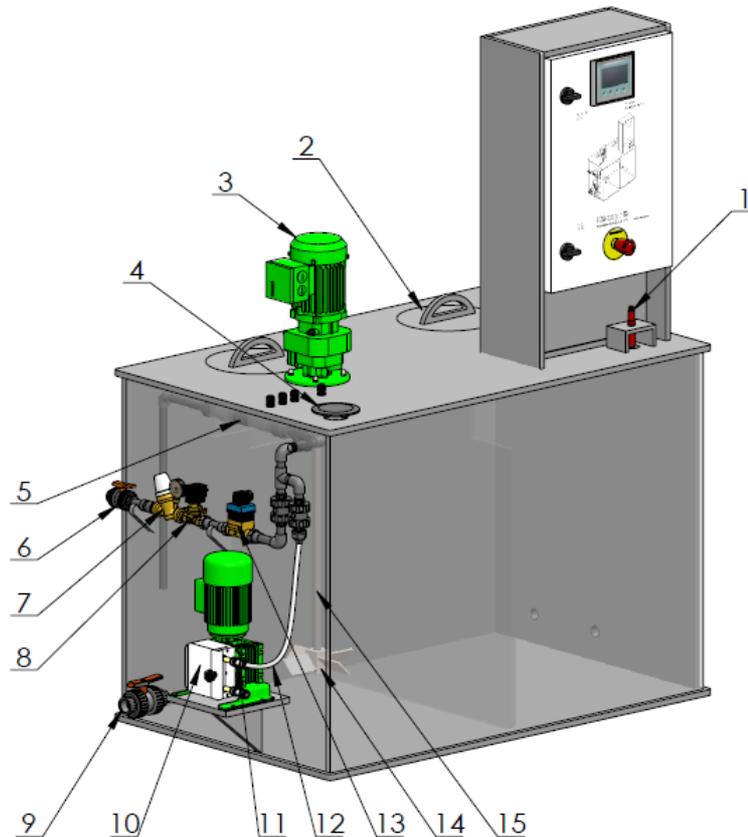
❖ **Strange noises**

- Looking for strange body's inside mixed chambers
- Confirm the Propellers is not scraping the tank walls
- Vibrations because the shaft is warped. Change it
- Vibrations because the motors are not fixed correctly
- Dosing pump is running without fluid in the dosing head or the existence of air inside of the suction pipe

❖ **Overflowing**

- The ultrasonic level is not working and gives incorrect information to PLC. Confirm connections or replace the sensor if is the case
- Solenoid valve doesn't close totally and continue enter water during stop periods. Open and clean it.

◆ 9.4 > Spare Parts List



Position	Name	Reference	Quantity
1	Prepared Level Sensor	CLD....LS2OMAIPF	1
2	Inspection Lid Tank	CLD....ILTPEKZG	2
3	Agitator Gear Motor	CLD....AM400SMS	1
4	Vent	CLD....VNTPPARG	1
5	Static Mixer	CLD....SMPVCKZG	1
6	Inlet PVC Valve	CLD....IVPVCSPX	1
7	Pressure Valve	CLD....PVCLFL	1
8	Solenoid Valve	CLD....SV24BRKL	1
9	PVC Discharge Valve	CLD....DVPVCSPX	3
10	Dosing Pump	CLD....DPBSR (*MDPG020MAPMT)	1
11	Pipe connection	CLD....PCPETNF (*PCMPTNF)	2
12	Pump Pipe	CLD....PPPETNF	1
13	Flow Meter	CLD....FM24BL	1
14	Propeller for Mixer	CLD....PM316MEXP	1
15	Shaft for Mixer	CLD....SM316MEXP	1

(*)-reference for membrane dosing pump

Note: Refer to CL model and serial number for spare parts request

