

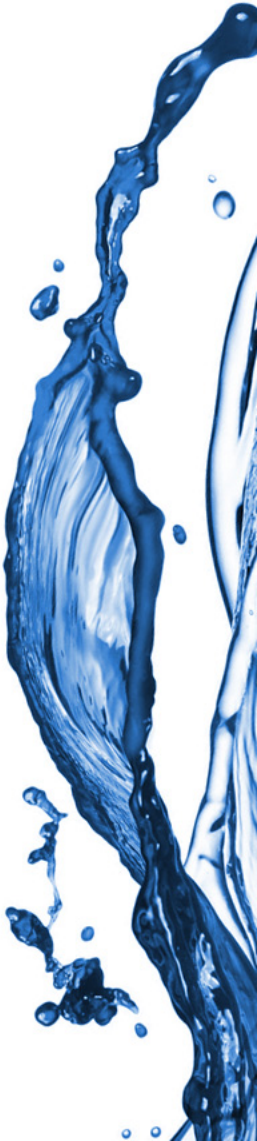
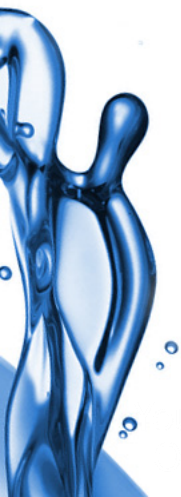


seko

New PolyCendos range

New PolyCendos Range

- All the benefits of the existing range with series of improvements
- 6 new models able to deliver up to 8000 l/h of flocculant preparation, considering the standard maturation time 60 minutes
- For use in treating potable and industrial processing water, purifying waste water, treating sludge etc.
- Models to fit both powder and liquid polymers
- Ultimate flexibility with broad range of options like tank size, mixers, motors, electrical control panels
- Considerable savings in terms of polymer usage and running costs, offering multiple function and capacity choices
- Automatic mixed polymer preparation process obtained using level control
- Precision in the preparation and batching stages – automatic or proportional polymer dosage
- Ease of installation, units can be mounted with the back near a wall creating reduced footprint



General description

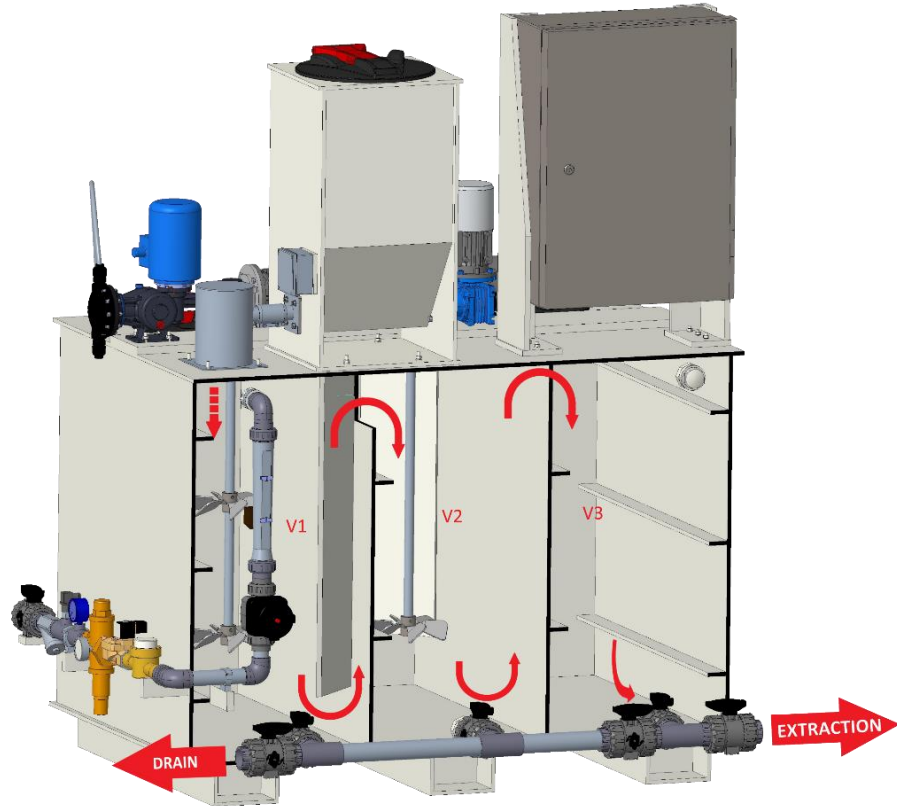


- SEKO's PolyCendos Series offers a complete range of polymer preparation systems.
- Range designed to meet all common applications where automatic preparation of polymer solutions is required
- Footprint designed for confined spaces
- Polyelectrolytes have a wide range of applications from water purification, to oil recovery, from color removal, to paper making and mineral processing.
- Polyelectrolytes are both flocculants as well as deflocculants depending upon the molecular weight.

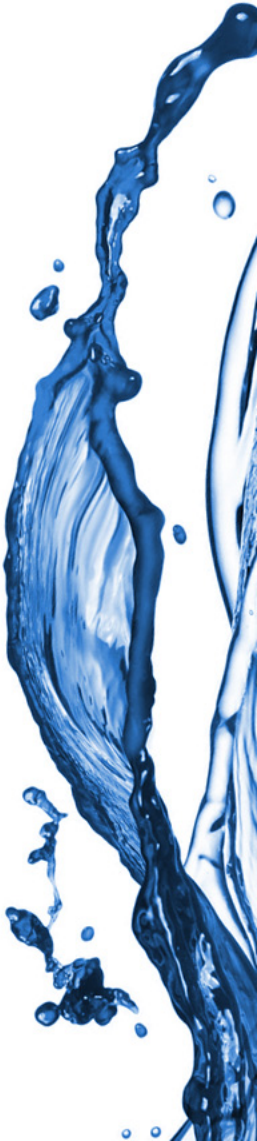


Functioning principle

SEKO



- Preparation tank is divided into three chambers: dissolving V1, maturing V2 and storage V3
- Interconnected by siphons creating necessary flow between the tanks.
- Polyelectrolyte from dosing unit comes into contact with water, which is sprayed from a nozzle that ensures uniform dispersion.
- The water/polyelectrolyte mixture drops into the tank below where the dissolving phase begins.
- In dissolving chamber V1, a slow agitator keeps the contents of the tank moving ensuring thorough homogenization of the solution.
- Siphon transfers solution to maturing chamber, V2, where another slow agitator keeps the solution uniform until maturing is complete.
- Solution transferred to storage chamber V3 from where it can be transferred for use.

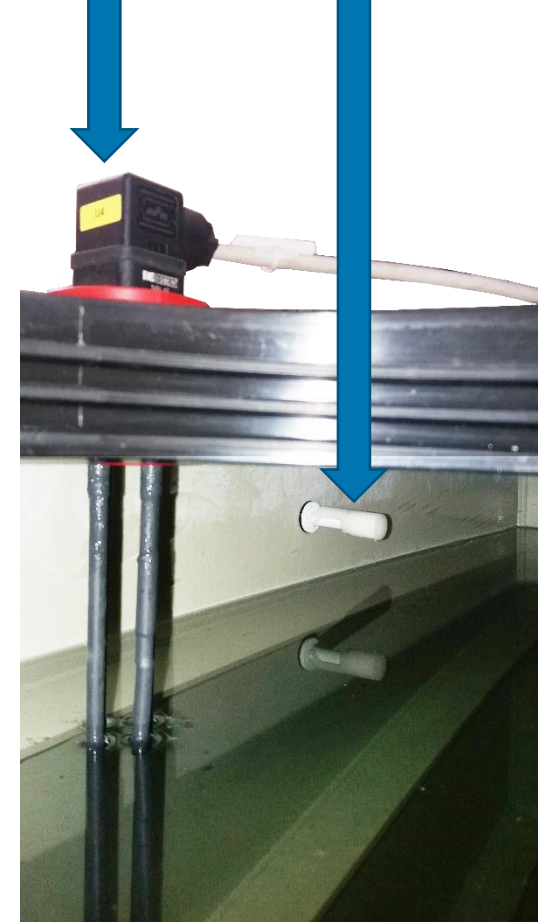


Functioning principle

- The level switches installed in tank V3, control the unit's automatic functions:
- **High and normal level** switch: when solution reaches high level, switch stops the powder dosing unit / liquid polymer dosing pump and closes water inlet solenoid valve. In normal level position, it enables the dosing unit to function and opens the water solenoid valve.
- **Below minimum level (Low level)** switch: if solution falls to minimum levels, switch stops dosing pump and sets off alarm on electrical control board.
- **Above maximum level (overflow level)** switch: if solution reaches overflow point, switch stops the powder dosing unit/ liquid polymer dosing pump and closes the water inlet solenoid valve preventing delivery of mixed polymer solution to the drain.

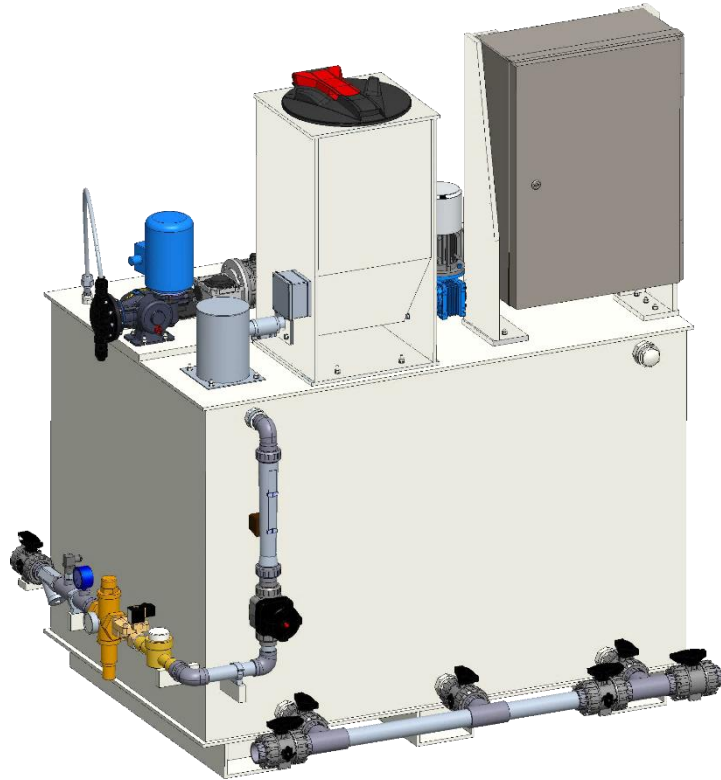
High and normal level,
Low level alarm

High level alarm
(Overflow level)

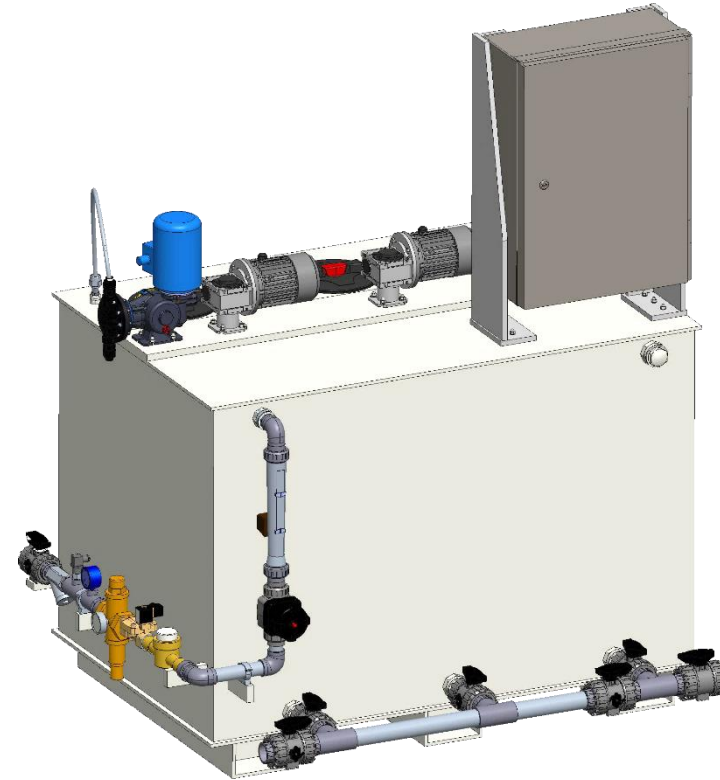


PolyCendos unit types

According to the type of polymer used, SEKO's PolyCendos are split into:



PolyCendos units that work with powder or liquid polymer

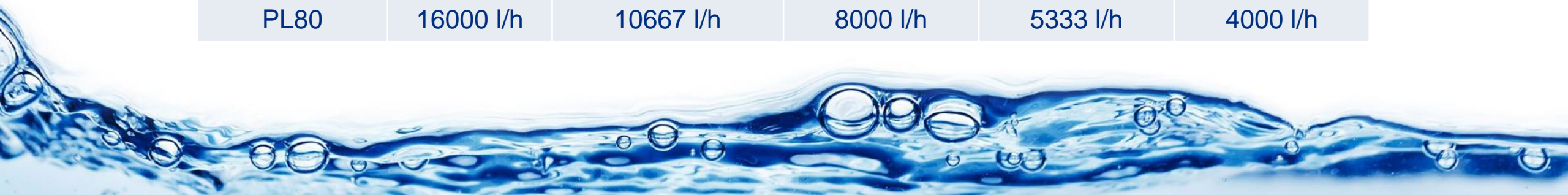


PolyCendos units that work only with liquid polymer

PolyCendos unit types

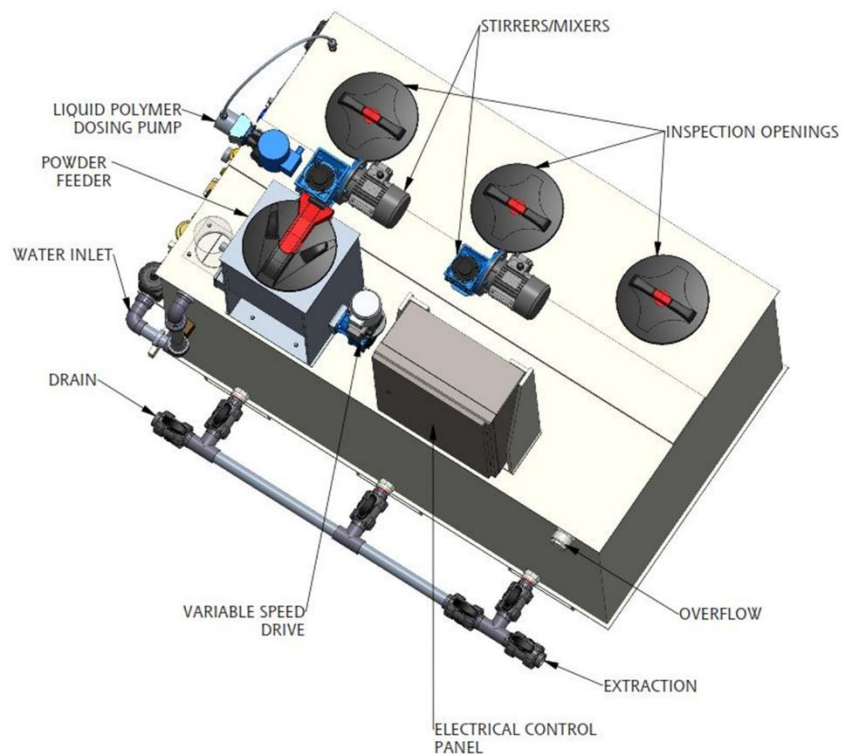
PolyCendos units are classified according to tank capacity and maturation time of the polymer, as follows:

Maturation time \ Unit Capacity	30 min	45 min	60 min	90min	120 min
PL05	1000 l/h	667 l/h	500 l/h	333 l/h	250 l/h
PL10	2000 l/h	1333 l/h	1000 l/h	667 l/h	500 l/h
PL20	4000 l/h	2667 l/h	2000 l/h	1333 l/h	1000 l/h
PL40	8000 l/h	5333 l/h	4000 l/h	2667 l/h	2000 l/h
PL60	12000 l/h	8000 l/h	6000 l/h	4000 l/h	3000 l/h
PL80	16000 l/h	10667 l/h	8000 l/h	5333 l/h	4000 l/h

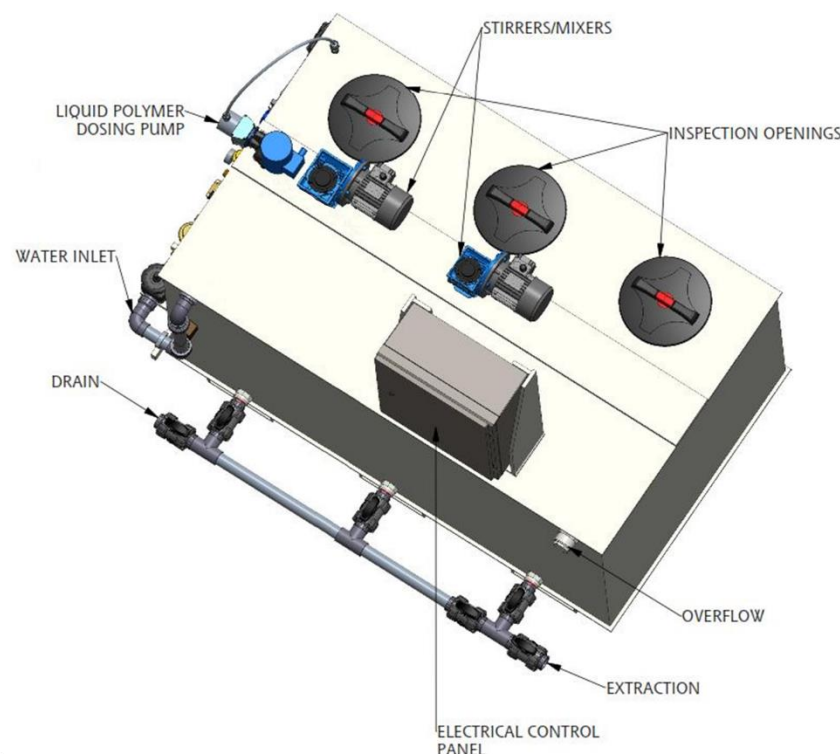


Main components

Dependent on type of polymer used, the SEKO's PolyCendos main components are:



PolyCendos units that work with powder or liquid polymer



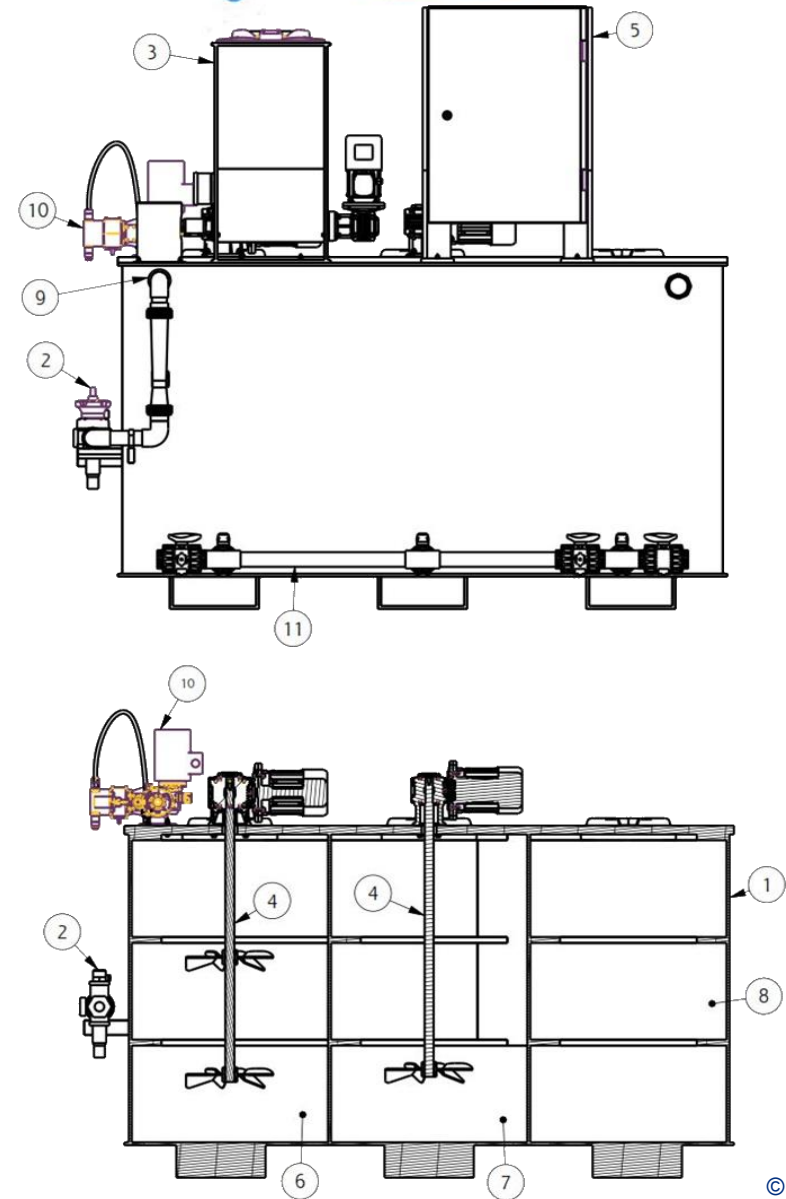
PolyCendos units that work only with liquid polymer

General system construction

A PolyCendos unit is assembled using identifying code of the unit and identifying code of electrical control panels.

For example, the PL unit, has the following functional units:

1. Storage tank (1). 3-chamber tank is offered across all PolyCendos range. The only exception is PL05 500L version that has a 2-chamber tank.
2. Water inlet group (2)
3. Powder feeder (3)
4. Stirrers/mixers (4)
5. Control cabinet (5)
6. Preparation area (6)
7. Maturing area (7)
8. Storage area (8)
9. Spraying Nozzle (9); (only for powder polymer versions)
10. Liquid polymer dosing pump (10)
11. Drain and outlet (11)





Main components description

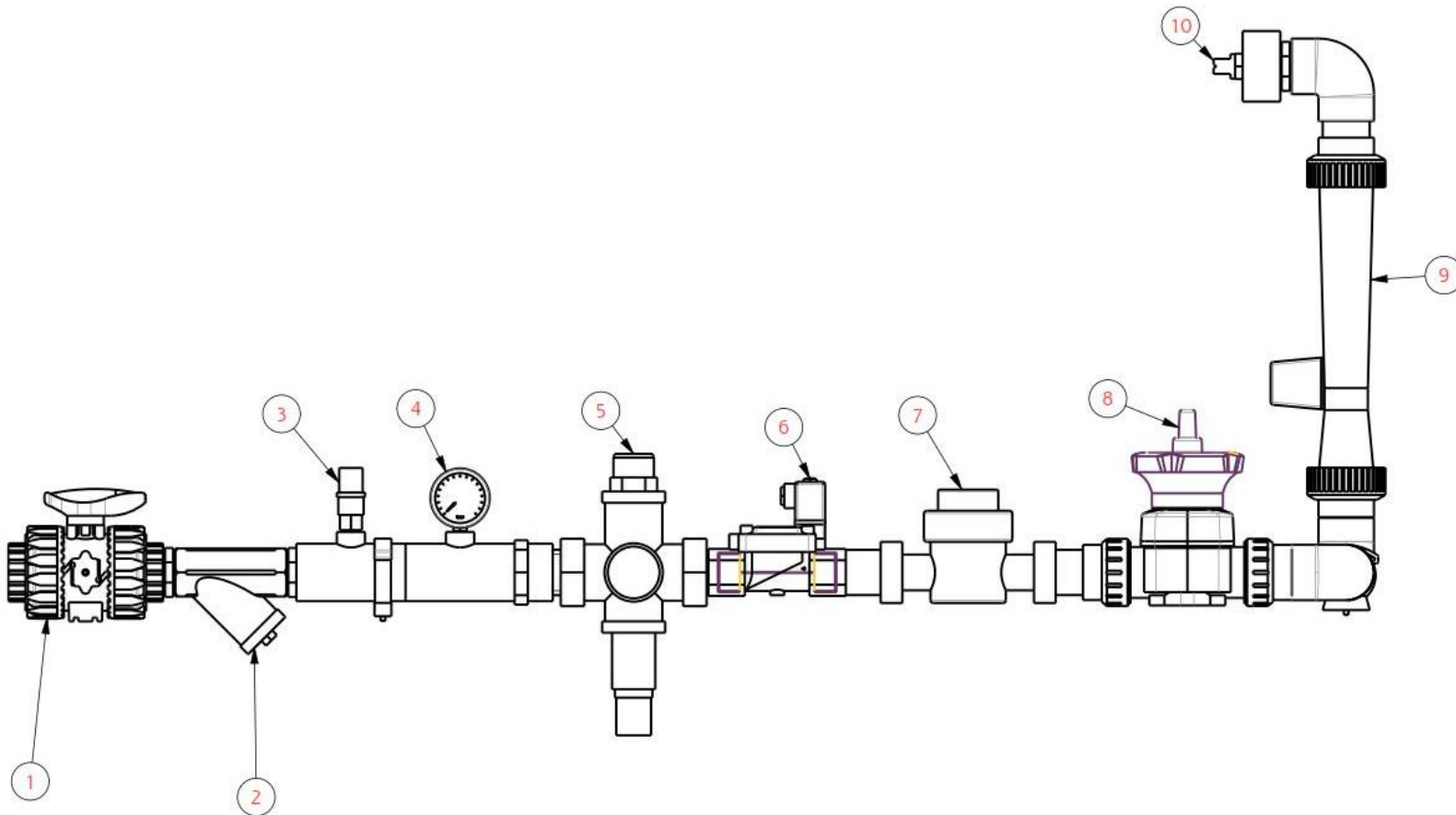
Water Inlet Group (for all types of units)

The water inlet group supplies the system with the required parameters of the preparation water.

- For PL05 500L version, water inlet group DN25 OD32 G1” PVC-U+Brass (ball valve, line strainer, pressure switch, pressure reducer valve with pressure gauge 0 - 10bar, solenoid valve NC 24VDC, water flow meter with pulses 4 pulse/l, diaphragm valve for flow rate adjustment, variable area flow meter with flow switch for minimum level)
- For PL10 1000L version water inlet group DN32 OD40 G1 1/4” PVC-U+Brass (ball valve, line strainer, pressure switch, pressure reducer valve with pressure gauge 0-10bar, solenoid valve NC 24VDC, water flow meter with pulses 4 pulse/l, diaphragm valve for flow rate adjustment, variable area flow meter with flow switch for minimum level)
- For PL20 2000l version water inlet group DN40 OD50 G1 1/2” PVC-U+Brass (ball valve, line strainer, pressure switch, pressure reducer valve with pressure gauge 0-10bar, solenoid valve NC 24VDC, water flow meter with pulses 4 pulse/l, diaphragm valve for flow rate adjustment, variable area flow meter with flow switch for minimum level)

Main components description

- **WATER INLET GROUP (for all types of units)**



1. Shut-off (ball) valve
2. Y strainer
3. Pressure switch
4. Pressure gauge
5. Pressure regulator
6. Solenoid valve
7. Diaphragm valve
8. Flow meter with impulses
9. Variable area flow meter with flow switch for minimum level
10. Spraying nozzle

Main components description

Powder Feeder

- The powder feeder used only in PolyCendos versions using powder polymers. Standard powder feeder has a capacity of 60l
- Feeder screw pipe heater fitted as standard to PL systems. Dry feeder activated by frequency converter ensuring quantity - proportional dosing of powdered polymer into preparation water.
- Metering pipe heating system removes moisture that may penetrate unit preventing caking of powdered polymer.
- Setting correct powder flow rate requires information on concentration needed, maturation time and water inlet flow rate



Main components description

Diaphragm Dosing Pumps - Spring Series

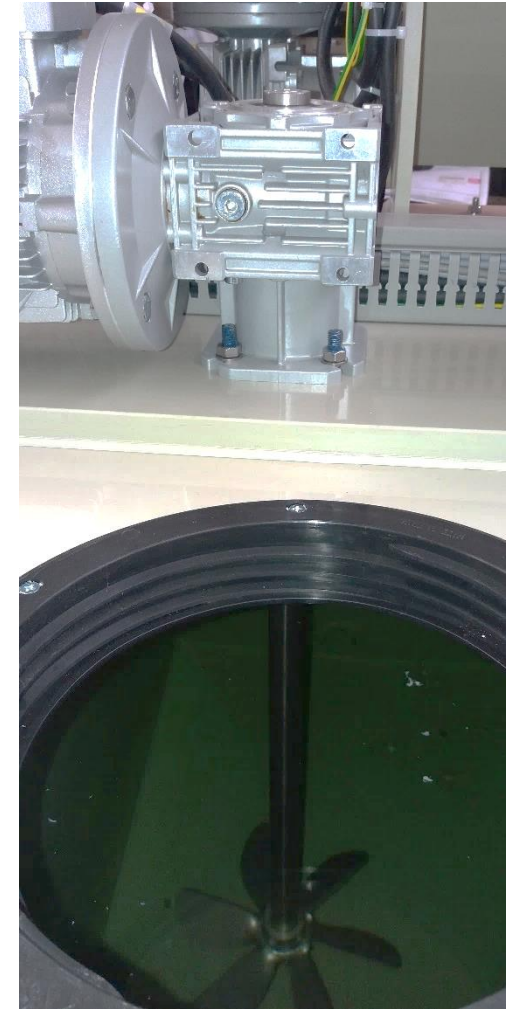
- Diaphragm dosing pump with max flow rate 20l/h used to deliver liquid polymer into chamber.
- Assures correct quantity of liquid polymer dosed into chamber to obtain the right concentration for polymer solution prepared.
- Required flow rate, depending on the type of control used, can be adjusted manually using pump's manual flowrate adjustment or proportionally using a frequency converter at water inlet.
- Setting correct liquid polymer flow rate requires information on concentration needed, maturation time and water inlet flow rate



Main components description

Mixers/Stirrers (for all types of units)

- PolyCendos units have 2 electrical stirrers as standard (1 inside the preparation chamber and 1 inside the maturation chamber).
- PL05 500Lt unit which contains only 1 mixer (in the preparation chamber). An extra stirrer for the storage chamber can be optionally selected using product key.
- Stirrers ensure solution is gently agitated in reservoir chambers.
- Dependent on capacity of unit, mixers are developed and selected ensuring polymer solution is correctly mixed.
- Mixer in the first chamber is designed with 2 propellers and the mixer in the second chamber has one propeller.





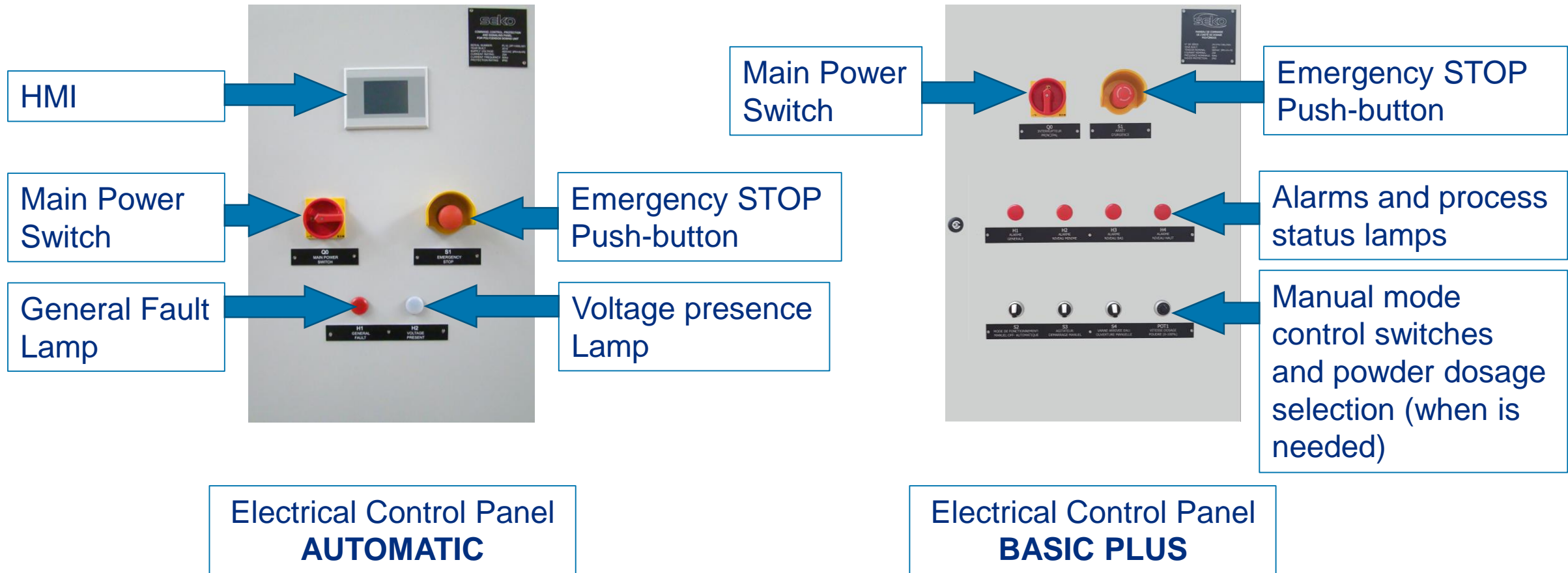
Electrical control panels

Electrical Control Panels developed for PolyCendos units contain power supply, fuses, all electrical control/command devices necessary for system operation. Divided according to level of automation required by the process and the type of polymer used.

- Available Electrical Control Panel types are:
 - Junction Box – for all types of units
 - Basic Plus – for units with powder or liquid polymer
 - Basic Plus – for units **only** with liquid polymer
 - Automatic – for units with powder or liquid polymer
 - Automatic – for units **only** with liquid polymer
- Each panel delivered with the unit along with *Electrical Drawing* and *Instruction Manual*.
- For more details about functioning and operation please study carefully these documents

Electrical control panels

Generic view





Electrical control panel - functioning

Basic Plus - for units that work either with powder or liquid polymer

- Applicable for all range and sizes of units that work with powder/liquid polymer
- Electric control panel provided with control buttons and indicator lamps
- The software logic is implemented on a programmable control relay
- Liquid polymer in **manual control mode**, dosing is constant at adjusted flow rate of liquid polymer dosing pump
- Liquid polymer in **automatic control mode**, dosing is constant at adjusted flow rate of liquid polymer dosing pump while inlet water valve is open and constant water flow rate is present
- Powder polymer, dosing flow rate adjusted using powder feeder motor speed and frequency inverter. In **manual control mode** feeder can be started at adjusted flow rate whenever needed. In **automatic control mode** feeder runs at adjusted flow rate while inlet water valve is open and constant water flow rate is present.



Electrical control panel - functioning

Basic Plus - for units that work only with liquid polymer

- Applicable for all range and sizes of units that work with liquid polymer
- Electric control panel provided with control buttons and indicator lamps
- The software logic is implemented on a programmable control relay
- For this particular control panel, it is possible to choose between 2 type of software:
 - a) **Software type STANDARD** - this type of software is recommended when the water inlet flow rate is constant
 - b) **Software type COMPLEX** - this type of software is recommended when the water inlet flow rate have variations
- **Manual control mode** for both STANDARD and COMPLEX software version, dosing is constant at adjusted flow rate of liquid polymer dosing pump, as needed
- **Automatic control mode** for STANDARD software version, the dosing is constant at adjusted flow rate of liquid polymer dosing pump while inlet water valve is open
- **Automatic control mode** for COMPLEX software version, **the dosing time** of liquid polymer pump (adjusted at a specific flow rate), @ 15 minutes cycles, is proportional to water inlet flow rate obtaining desired concentration even if flow rate varies.



Electrical control panel - functioning

AUTOMATIC - for units that work either with powder or liquid polymer

- Applicable for all range and sizes of units that work with powder/liquid polymer
- Electrical panel provided with human machine interface (HMI) which allows control and visualization of operating state of PolyCendos preparation unit
- The software logic is implemented on a programmable control relay
- **Manual control mode**, for both liquid and powder polymer, dosing can be done:
 - a) proportionally with water inlet flow rate at a chosen concentration as needed
 - b) maximum flow rate of liquid polymer pump/powder polymer feeder, as needed
- **Automatic control mode**, for both liquid and powder polymer, dosing is proportional to water inlet flow rate at chosen concentration adjusted by varying speed of pump/feeder motor with a frequency inverter



Electrical control panel - functioning

AUTOMATIC - for units that work only with liquid polymer

- Applicable for all range and sizes of units that work with liquid polymer
- Electrical panel is provided with human machine interface (HMI) allowing control and visualization of operating state of PolyCendos preparation unit
- The software logic is implemented on a programmable control relay
- **Manual control mode**, dosing can be done:
 - a) proportionally to the water inlet flow rate at a chosen concentration as needed
 - b) maximum flow rate of liquid polymer pump, as needed
- **Automatic control mode**, dosing is proportional to water inlet flow rate at chosen concentration adjusted by varying speed of liquid polymer pump motor with frequency inverter



PolyCendos unit selection

Unit selection needs following information:

- Type of polymer: powder or liquid
- Maturation time (ex. 60 min)
- Capacity (size) of the unit or the extraction rate to determine the capacity
 - eg. 1: For an extraction rate 1000l/h & maturation time 60min, capacity of tank will be 1000L
 - eg. 2: For an extraction rate 1000l/h & maturation time 30min, capacity of tank will be 500L
- Concentration of polymer (usually a percentage, eg 0.5% - or a quantity – eg. 2g/l). When the concentration given as quantity, concentration needs calculation
 - eg. For a unit capacity 1000L and concentration of 2g/l, the concentration in percentage will be $(2/1000)*100 = 0.2\%$
- When this data is received select the unit using the key code
- Code also contains any selected optional features



PolyCendos unit selection

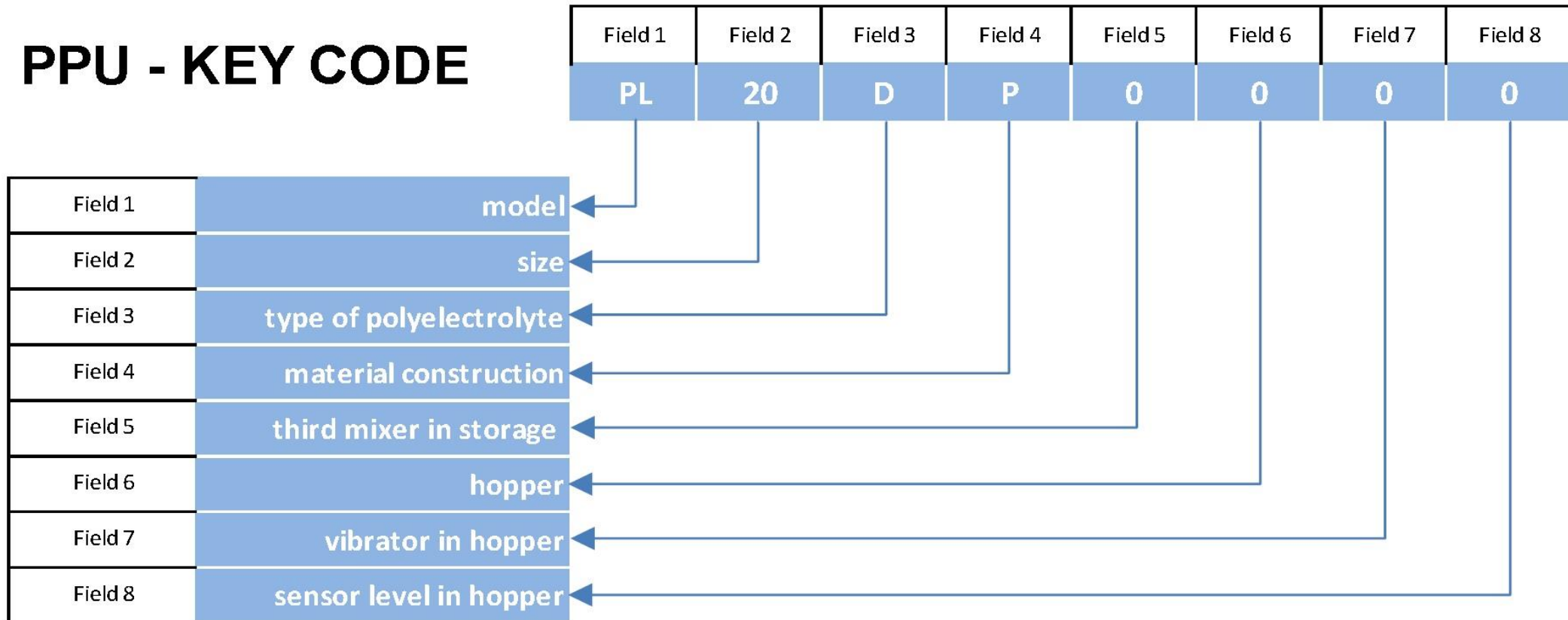
Example 1:

- Type of polymer: either powder or liquid. This example will work mainly with powder polymer so we will configure a code with the standard 60L powder feeder (without vibrator or level sensor in hopper)
- Maturation time: 60 min
- Capacity (size) of the unit: 2000l/h
- Concentration of the polymer: 10g/l (For a unit capacity 2000L and concentration of 10g/l the concentration in percentage will be $(10/2000)*100 = 0.5\%$)
- Considering the fact the unit can work with powder or liquid polymer example 1 assumes water inlet flow rate could vary and so to assure that dosage of polymer will be done proportionally with this flow rate, in order to obtain the proper concentration of the mixed solution

PolyCendos unit selection

Example 1 : the code will look like this:

PPU - KEY CODE





PolyCendos unit selection

Key code legend

- **model:** PolyCendos
- **size [l/h]:** Capacity of unit in terms of extraction flow rate considering maturation time, for 60 min maturation time the capacity of the unit is the same with the volume of the tank, for this example 2000L
- **type of polyelectrolyte:** powder, liquid, either powder or liquid
- **material of construction:** Polypropylene High Density
- **third mixer in storage:** Additional mixer for storage chamber
- **hopper:** Standard – Hopper 60L with heating ejection pipe (for units that work with powder polymer), Without Hopper (the unit work with liquid polymers),
- **vibrator in hopper:** Standard – WITHOUT vibrator in hopper, WITHOUT vibrator in hopper (the unit work with liquid polymers), with vibrator in hopper
- **sensor level in hopper:** Standard – WITHOUT sensor level in hopper, WITHOUT sensor level in hopper (the unit work with liquid polymers), with sensor level in hopper

- *Note for pricing address to the Sales and Technical department*



Electrical control panel selection

Selection of Electrical control panel needs information on planned usage

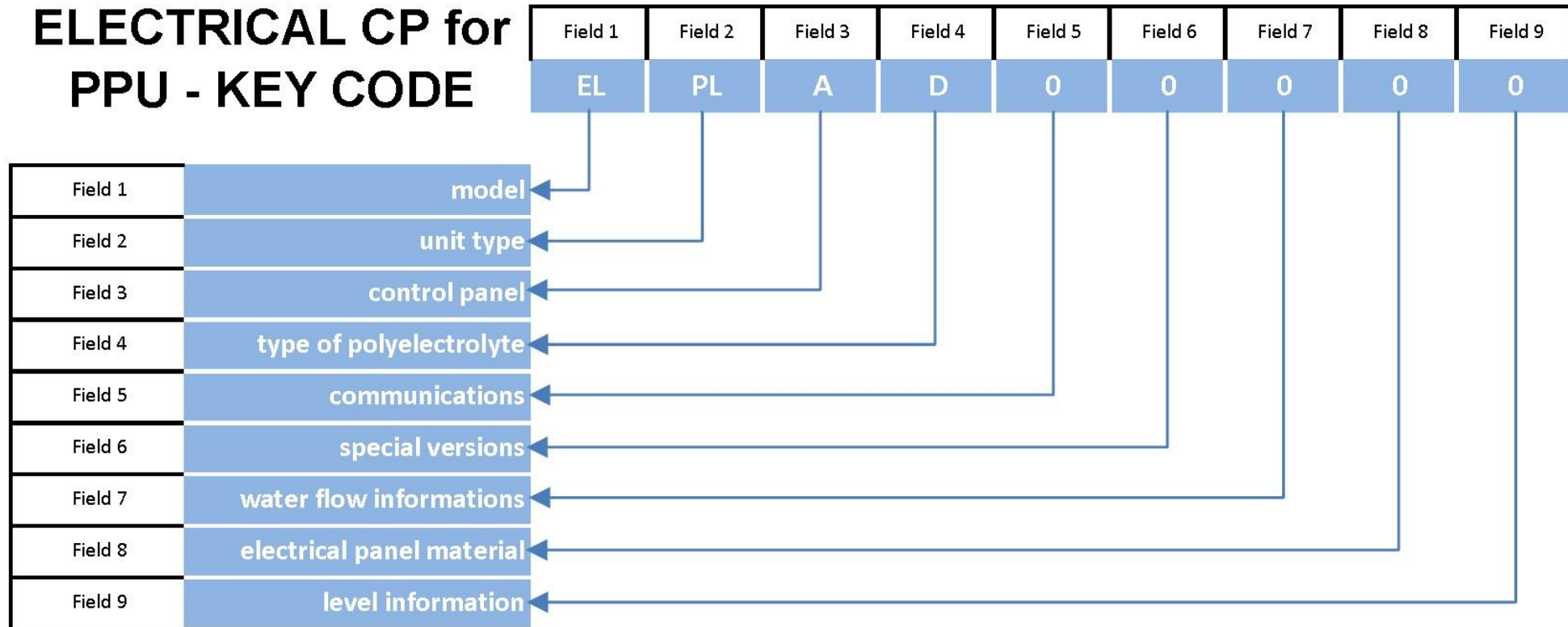
Considering the functioning principle of the standard electrical control panels showed in the previous slides, we can match it with the functioning type required by the beneficiary system

Example 1 :

- Considering the unit selected in the previous example (PL20DP00000 which means that we need a unit with capacity of the tank 2000L, type of polymer used (either powder or liquid – depending on the operation necessity), concentration 0,5%, maturation time 60 minutes, extraction rate 2000l/h) and assuming that customer requires proportional dosage of the polymer (even if he use powder or liquid polymer) with the water inlet flow rate, we will choose (according to the key code) an Automatic Electrical control panel that works with powder or liquid polymer.

Electrical control panel selection

Example 1 the code will look like this:





Electrical control panel selection

Key code legend

- **model:** Electrical control panel or Junction Box
- **unit type:** Type of polymer preparation unit - PolyCendos
- **control panel (type):** Junction Box, Basic Plus, Automatic
- **type of polyelectrolyte** (used by the PolyCendos unit): powder, liquid, either powder or liquid
- **communications:** Standard – potential free contact (running/fault, remote ESD). Options available on other communication protocols.
- **special versions** (in terms of power supply): Standard – 400VAC 3Ph+N+PE 50Hz. Optionally other power supply types can be selected.
- **water flow information:** Standard – visual indication locally, on instrument. Options available on other ways to transmit and read the water inlet flow rate information.
- **electrical panel material:** Standard – GRP, safe are, IP66, NEMA 4, 4X – CE/GOST approval,
- **level information:** Standard – conductive level probes, 4 electrodes for 3 adjustable levels
- *For other options address to the Sales and Technical department*



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