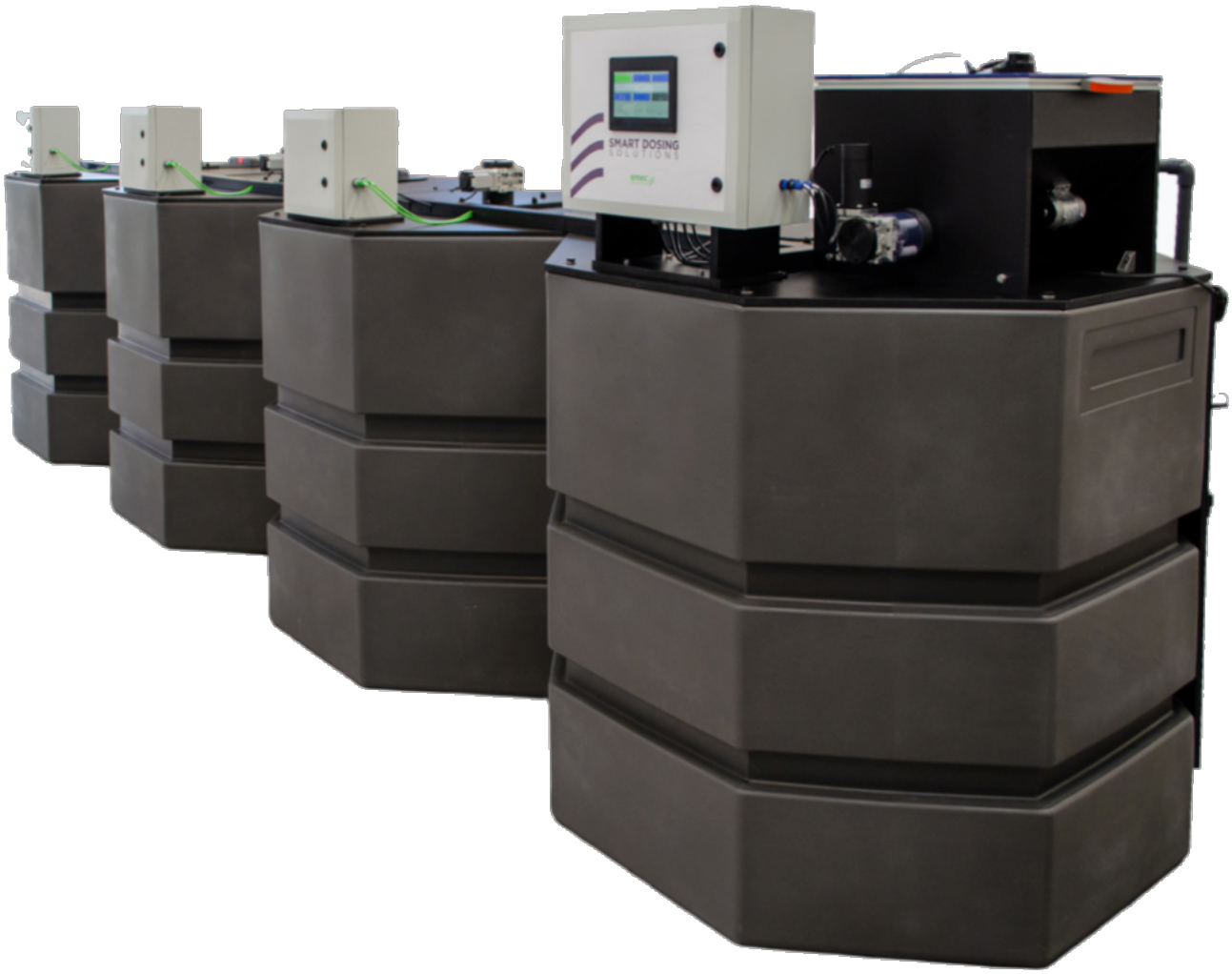
TetraMix

Automatic polyelectrolyte preparation system

TetraMix is a modular and expandable, fully automatic polyelectrolyte preparation system designed for the continuous preparation of polyelectrolyte solutions from dry or emulsion polymers. It is intended for use in municipal and industrial wastewater treatment plants and ensures high performance in sedimentation, clarification/flocculation and sludge dewatering processes. The system uses advanced technologies (brushless motors, radar level controls, ultrasonic flow meter) and materials with high chemical and mechanical resistance (HDPE, PPH, PVC, AISI 316). Operation is fully automated by an electrical control panel with a 7” touchscreen HMI.



Fields of application

- Municipal and industrial wastewater treatment plants
- Sludge and wastewater treatment
- Industrial water treatment
- Chemical and pharmaceutical industry
- Processes using flotation units, clarifiers, filter presses and centrifuges

Operating principle

Phase	Operation	Description
1	**Mixing**	Dry polymer dosing by screw feeder and initial homogenisation with preparation water.
2	**Maturation**	Reaction and stabilisation of the mixture. Typical time for powdered polyelectrolyte: 30–60 minutes.
3	**Storage**	Controlled storage of the prepared solution until required.
4	**Withdrawal**	Accurate and consistent delivery of the solution to downstream dosing pumps/users.

Construction features

Moulded process tanks

- Independent master tank, expandable with additional modules
- Material: HDPE
- Single tank dimensions: 1390 × 1390 × H 1230 mm
- Assembly by means of rectangular flanges with gaskets and M8 screws
- 2” drain connections

Powder feeder

- PPH body
- Adjustment by brushless motor with electronic speed control from HMI
- 35 l (9.24 gal) loading hopper with vibrator in a resealable airtight enclosure
- Powder level control by radar probe (minimum level)
- Plastic-coated screw feeder
- Solution concentration range: 0.05–0.5%

Preparation water supply

- Hydraulic circuit with shut-off solenoid valves and regulating valves
- Electronic flow meter
- Water inlet pipe size (DN/thread): 1” Gas, NPT on request

- Water pressure min.–max.: 2–4 bar ≈ 29–58 psi
- Preparation water flow rate min.–max.: 1600–8000 l/h ≈ 423–2,113 GPH (US)
- Permissible water temperature: 5 to 25 °C ≈ 41–77 °F

Mixer agitator

- Three-phase brushless motor, L1000 mm – 400 W
- No. 2 four-blade impellers Ø 400 mm
- Precise speed adjustment from HMI
- Peripheral speed 1,68 m/s
- Total flow rate 600 m3/h ≈ 158 503 gal/h

Solution level control

- Dedicated radar level probe
- Trip thresholds configurable from HMI

Electrical control panel

- 7” touchscreen HMI for equipment and parameter management
- Ethernet TCP/IP communication
- ABS enclosure – IP66 protection rating
- Supply voltage: 230 Vac
- Frequency: 50–60 Hz
- Number of phases: 2 + PE
- Total installed power: 170 W
- Communication protocol: Ethernet Modbus TCP

Main materials in contact with the product

- Tanks: moulded, octagonal, HDPE
- Powder feeder: PPH
- Pipes and fittings: PVC-U
- Metal parts: AISI 316

Permissible operating conditions

- Ambient temperature min.–max.: +10 to +40 °C ≈ +50 to +104 °F
- Max. relative humidity: 95%
- Preparation water temperature: 5 to 25 °C ≈ 41–77 °F
- Installation type: indoor / covered outdoor
- Maximum altitude: up to 1000 m without restrictions; from 1000 to 2000 m, derating of 1.5% per 100 m

Permissible polyelectrolyte

- Physical form (powder / emulsion):
- Permissible particle size: 0.4–1 mm
- Prepared solution viscosity: 10 cP, representative for 0.2% PE
- Product bulk density: 0.8–1 (see product specifications)
- Typical maturation time (powder): 30/45/60 minutes

Safety and alarms

Main alarms

- Emergency stop
- Low water flow rate
- Minimum solution level
- Maximum level (H)
- Overflow level (HH)
- Agitator alarm
- Powder feeder alarm

Safety devices

- Mushroom-head emergency stop button
- Radar level probes (minimum, maximum, overflow)
- Airtight powder enclosure for operator protection

Overall electrical data

- Rated voltage: 230 Vac
- Frequency: 50–60 Hz
- Total rated installed power: 170 W for the 6000 l/h model ≈ 1585 GPH (US)
- Total rated current draw: 0.74 A for the 6000 l/h model ≈ 1585 GPH (US)
- Control panel protection rating: IP66
- Recommended power cable cross-section: 3 × 1.5 mm²

Dimensions, weights and noise level

- Overall dimensions (W × D × H) by model: PLD 1500 1390 x 1390 x 1740
- Overall dimensions (W × D × H) by model: PLD 3000 1390 x 1390 x 1543
- Overall dimensions (W × D × H) by model: PLD 4500 1390 x 1390 x 1543
- Overall dimensions (W × D × H) by model: PLD 6000 1390 x 1390 x 1543
- Empty weight by model: PLD 1500 100 Kg ≈ 220,5 lb
- Empty weight by model: PLD from 3000 to 6000 70 Kg ≈ 154,3 lb
- Operating weight by model: 1600 Kg ≈ 3524,4 lb
- Operating noise level (dB(A) at 1 m): 60 with vibrator operating, 40 with vibrator paused

Available models and performance data

Type / Model	PLD-1500-1	PLD-3000-2	PLD-4500-3	PLD-6000-4
No. of modular tanks	1	2	3	4
Total tank volume [l] **[gal]**	1702 450	3404 899	5106 1349	6808 1799
Tank material	PEHD	PEHD	PEHD	PEHD
Max. hourly production [l/h] – maturation 45' **[GPH]**	1875 495	3750 991	5625 1486	7500 1982
Max. hourly production [l/h] – maturation 60' **[GPH]**	1500 396	3000 793	4500 1189	6000 1585
Power consumption [W]	85	105	138	170
Single tank dimensions [mm]	1390 × 1390 × h 1230	1390 × 1390 × h 1230	1390 × 1390 × h 1230	1390 × 1390 × h 1230
Empty weight [kg] **[lb]**	100 220,5	70 154,3	70 154,3	70 154,3
Operating weight [kg] **[lb]**	1600 3524,4	1600 3524,4	1600 3524,4	1600 3524,4

Installation time

- 1 hour for Model PLD-1500-1
- 2 hours for Model PLD-3000-1
- 3 hours for Model PLD-4500-1
- 4 hours for Model PLD-6000-1
  REQUIRED EQUIPMENT
- Pallet truck
- 13 and 17 mm spanners, Allen key set, screwdrivers
- No. 2 medium-skilled qualified operators

Options and accessories

- 70 litre hopper extension (18.9 gal)

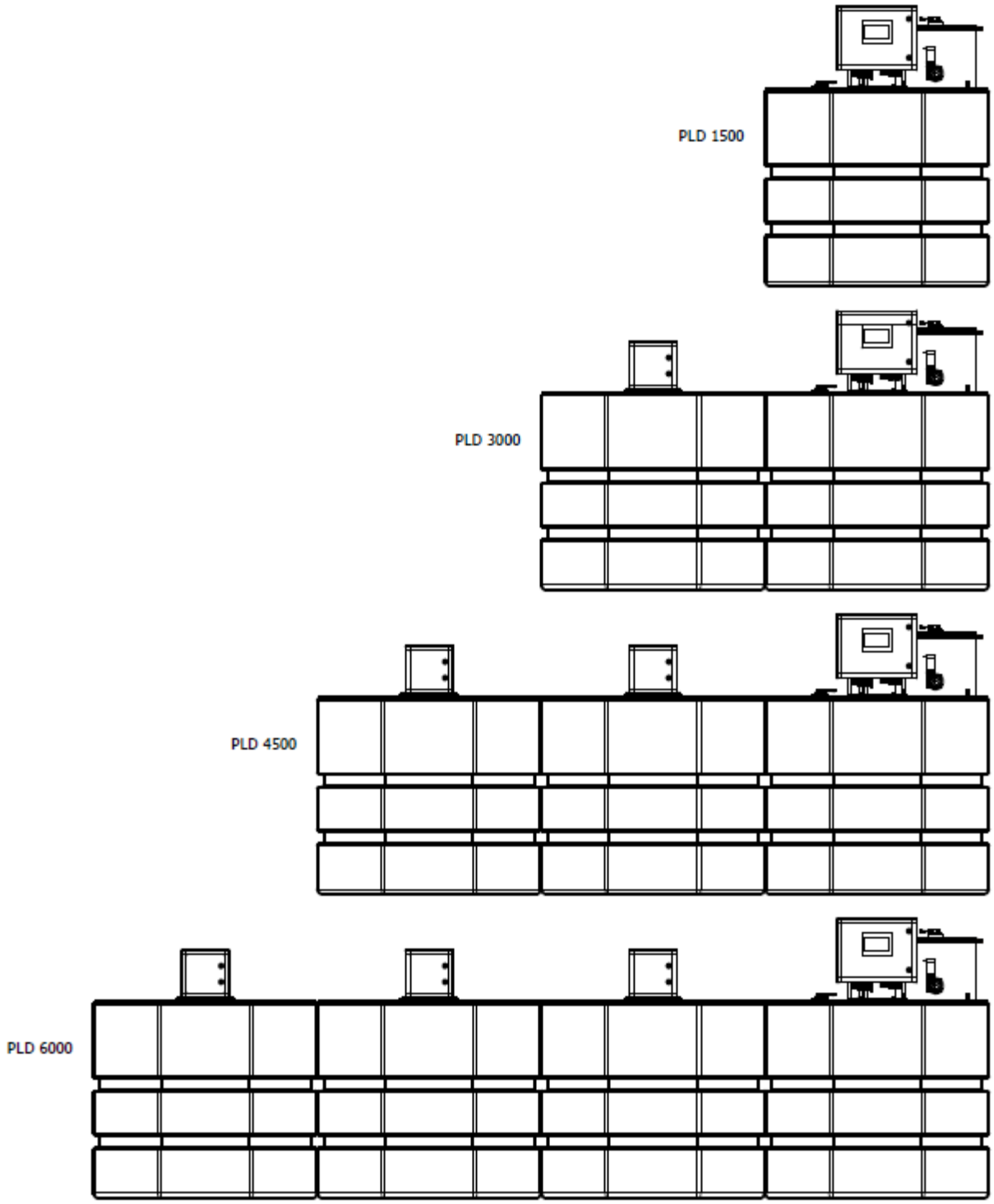
Applicable certifications and directives

- CE marking
- Machinery Directive 2006/42/EC
- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Other applicable certifications / directives

TETRAMIX

Technical Datasheet

Dimensions / Models



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Specifications subject to change without notice | R2025

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SIMPLE AS WATER

IQNET CERTIFIED MANAGEMENT SYSTEM
qualityaustria SYSTEM CERTIFIED
ISO 9001:2015 No.07728/0
ISO 14001:2015 No.00997/0
ISO 45001:2018 No.01121/0

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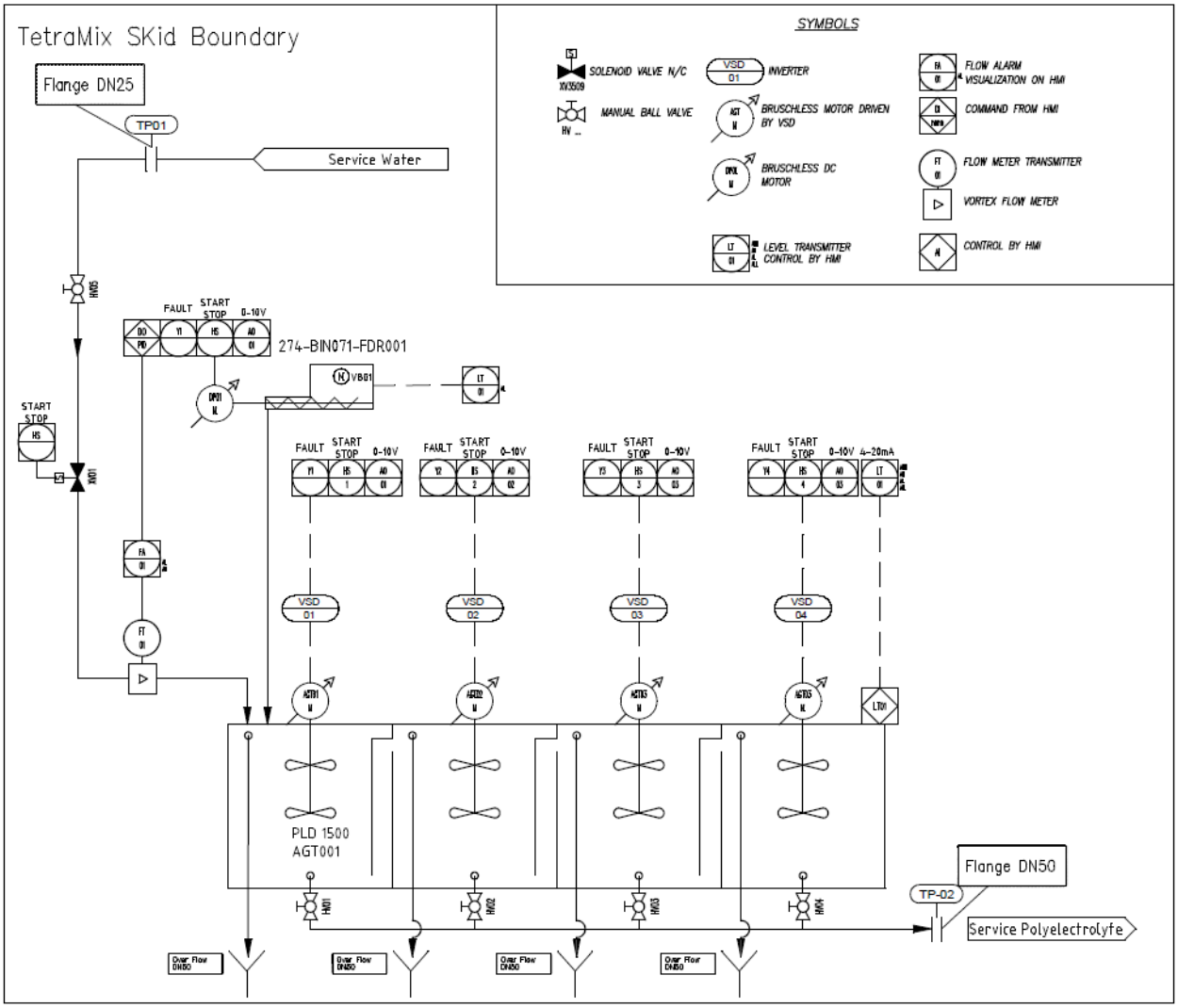
TetraMix SKid Boundary
Flange DN25
TP01
Service Water
SYMBOLS
SOLENOID VALVE N/C
MANUAL BALL VALVE
INVERTER
BRUSCHLESS MOTOR DRIVEN BY VSD
BRUSCHLESS DC MOTOR
LEVEL TRANSMITTER CONTROL BY HMI
FLOW ALARM VISUALIZATION ON HMI
COMMAND FROM HMI
FLOW METER TRANSMITTER
VORTEX FLOW METER
CONTROL BY HMI
274-BIN071-FDR001
FAULT
START STOP
0-10V
4-20mA
VSD 01
VSD 02
VSD 03
VSD 04
PLD 1500
AGT001
Flange DN50
TP-02
Service Polyelectrolyte
Over Flow DN50