emec®
SIMPLE AS WATER

# SYSTEMS CATALOGUE

## POWDER DOSING AND DISINFECTION SOLUTIONS

emec®
SIMPLE AS WATER

# SOLUTIONS FOR WATER TREATMENT

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# SIMPLE AS WATER

Water is a vital element. We are connected to it by a covenant of respect and pure gratitude.
For over 40 years we have been working to make the human-water relationship more harmonious, safe and natural, drawing from a single source of inspiration.

***The semplicity.***

## Flexibility, with three fundamental principles

Since 1982, we have been designing and producing reliable, cutting-edge instruments for water treatment and chemical dosage. In a world that changes so fast, flexibility and innovation are fundamental to us.
As a company, we are open to change, because we are rooted in three fundamental principles: constant research, extreme precision, healthy relationships.

### CONSTANT RESEARCH

Being at the cutting edge means constant study. Our R&D and design departments are where our heart beats.
Extremely high-profile engineers and technicians are committed to developing software and designing hardware, but also to studying and evaluating hydraulic and mechanical components.
Just like water, we have branched out over time, spreading out into wide-ranging areas.

- Industrial water treatment
- Purification plants
- Treatment of water used in industrial processes
- Chemical-physical purification processes
- Bacteriological purification systems
- Sewage irrigation plants
- Chemical industry
- Food processing Industry
- Cooling towers
- Refineries
- Wellness centres
- Swimming pools
- Car washes

### EXTREME PRECISION

Our second fundamental principle is complete control of our production line.
We are entirely responsible for every stage of the process, from invention to delivery. Our products undergo up to 10 quality checks and are tested four times before reaching the customer.
The quality management system of our production process is ***ISO 9001*** certified and has customer satisfaction as its ultimate goal, as well as continuous improvement of company performance.
Customers satisfaction comes hand-in-hand with ensuring safety for them, their operators and final users.
Our dosing pumps and controllers are ***UL*** certified to guarantee full compliance with general requirements for safety of use, while ***NSF*** certifications guarantee that our pumps do not release hazardous pollutants into the water and therefore are fully safe for use in contact with drinking water, for example in the food production industry, or at recreational facilities like swimming pools and spas.

### HEALTHY RELATIONSHIPS

Extremely high performance, top quality and high technology are our greatest assets. But there is more.
Every day, we safeguard something equally important: human capital.
Our co-workers are the best professionals on the market; the most expert and competent people.
For this reason our organizational model is designed to manage their safety and health in an organic and systematic way, respecting the international standard ***ISO 45001.***
At the moment our company numbers nearly 200 employees, 35% of these are women. Statistically, this is a highly respectable percentage in a technical sector like ours. It is a number that is destined to grow.

# The difference between consultant and supplier

Over the years, we have learnt to be good listeners, which is fundamental to an understanding of customers' real needs. This delicate task is handled by our Business Unit, which is entirely made up of technicians.
Their in-depth knowledge of every step of the production process makes it possible for them to offer focussed consulting, both for the choice and the personalisation of products.
We can offer a high level of customisation, which ranges from branding to hardware and software modifications made to standard models.

## A BACK OFFICE THAT IS ALWAYS UP FRONT

It is one of the feathers in our cap: a helpful and competent back office. Every day, their important contribution ensures that every aspect of our supply process is impeccable. This excellent care and attention contributes to the fact that the number of customers who choose to leave us is close to zero.

## QUALITY FROM THE OUTSET TO AFTER-SALES

For us, closing a deal does not mean the end of a relationship. We remain at our customers' disposal to make sure that, over time, our products are working properly. We are ready to respond to any request in real time, even outside office hours.

## COMPETENCE THAT SETS A PRECEDENT

As leaders in our sector, we realise that we have a great responsibility: preparing specialists and customers so that they can use the products we produce in the best possible way.
That is why we created the Emec Training Program: a series of training courses dealing with installation and maintenance in both private and company contexts.
Our training and refresher courses are run at our expense; and that includes participant's logistics costs. So you do not have to pay, but you earn in terms of competence.

# A world of care and attention

Water is the vital element on which our business is based. The least we can do to respect this inestimable resource is treat the environment in the best possible way. It is not just about abiding by laws, it is about respect for our ethics.

### LESS IMPACT, MORE SUSTAINABILITY

We think of sustainability as an endless path: each responsible step we take further reduces our company's environmental footprint.
To this end, we have adopted an Environmental Management System compliant with the international standard **ISO 14001**. This makes it possible to reduce atmospheric and acoustic emissions well below the prescribed limits; to rationalise consumption of water, electricity and gas; and to reduce the production of waste and the contamination of the land.
Sustainability also means giving waste material a second life: we recycle or reclaim 93% of circuit boards, paper and plastic; as well as shreds or chips of iron, aluminium, copper, bronze, brass and wood. In addition, we are equipped with an extractor that separates water from oil during the machine cleaning process, so that it can be reused in the production process.

### MAXIMUM EFFICIENCY. STARTING WITH ENERGY

We have opted for renewable energy sources, state-of-the-art boilers, and intelligent air conditioning. This has made it possible for us to drastically reduce our consumption of gas and electricity. The only energy we do not want to save is the one we put into our work.

### FROM GOOD INTENTIONS TO BEST PRACTICES

Everything we do to improve sustainability is shared with our employees, collaborators and partners through information and training activities. Every update is included in our Integrated System Manual: a tool that we ask everyone to respect in order to ensure that good intentions correspond to the day to day practices at work.

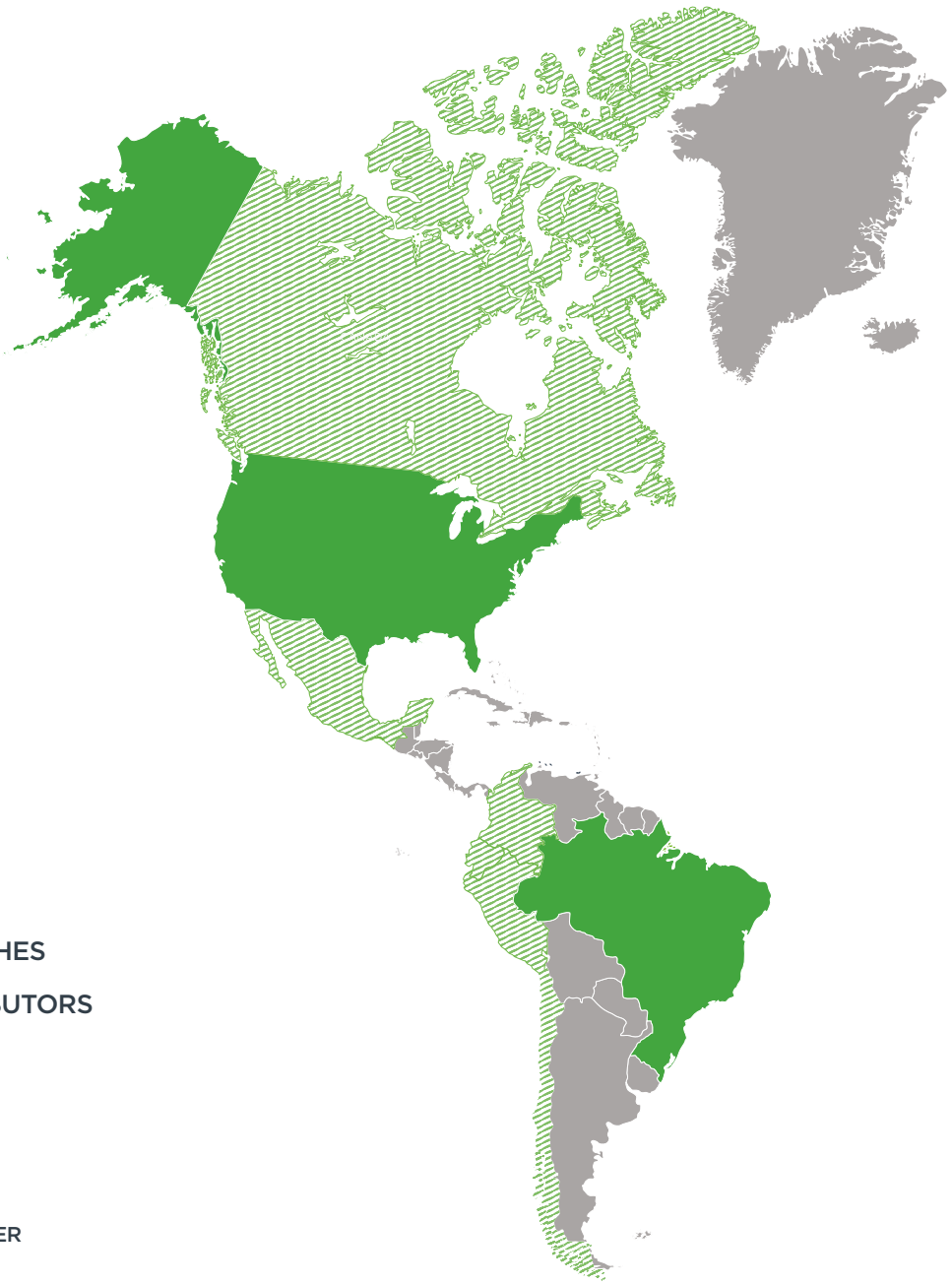
### EXCLUSIVE DISTRIBUTORS FOR EXCLUSIVE QUALITY

Becoming an exclusive Emec dealer in your country is an excellent opportunity for a variety of reasons:

- The excellent value for money of our references;
- Our company is extremely solid with a long-standing management structure;
- Guaranteed, qualified support to manage processes and solve technical and administrative problems;
- An in-house shipping department that can guarantee lead times (from order to shipment) to any country in the world;
- Access to training and refresher courses;
- Assistance is available directly online and can be accessed at any time. through the Reserved Area on **emecpumps.com**;
- Precious support for branding and communication.

# NOTHING IS SIMPLER THAN COMPLEXITY

The numbers speak for themselves. We are an extremely prolific company, with high-level technical know-how. We manage articulate and complex processes with increasingly sophisticated standards of innovation.



BRANCHES

DISTRIBUTORS

**EMEC**

SIMPLE AS WATER

**40+** years of excellence
**250+** employees
**88** countries
**10** branches
**10+** sectors
**120.000** dosing pumps/year
**15.000** controllers/year
**26.000** probes & sensors/year
**8.000** dosing station/year
**85.000** accessories

MADE IN ITALY

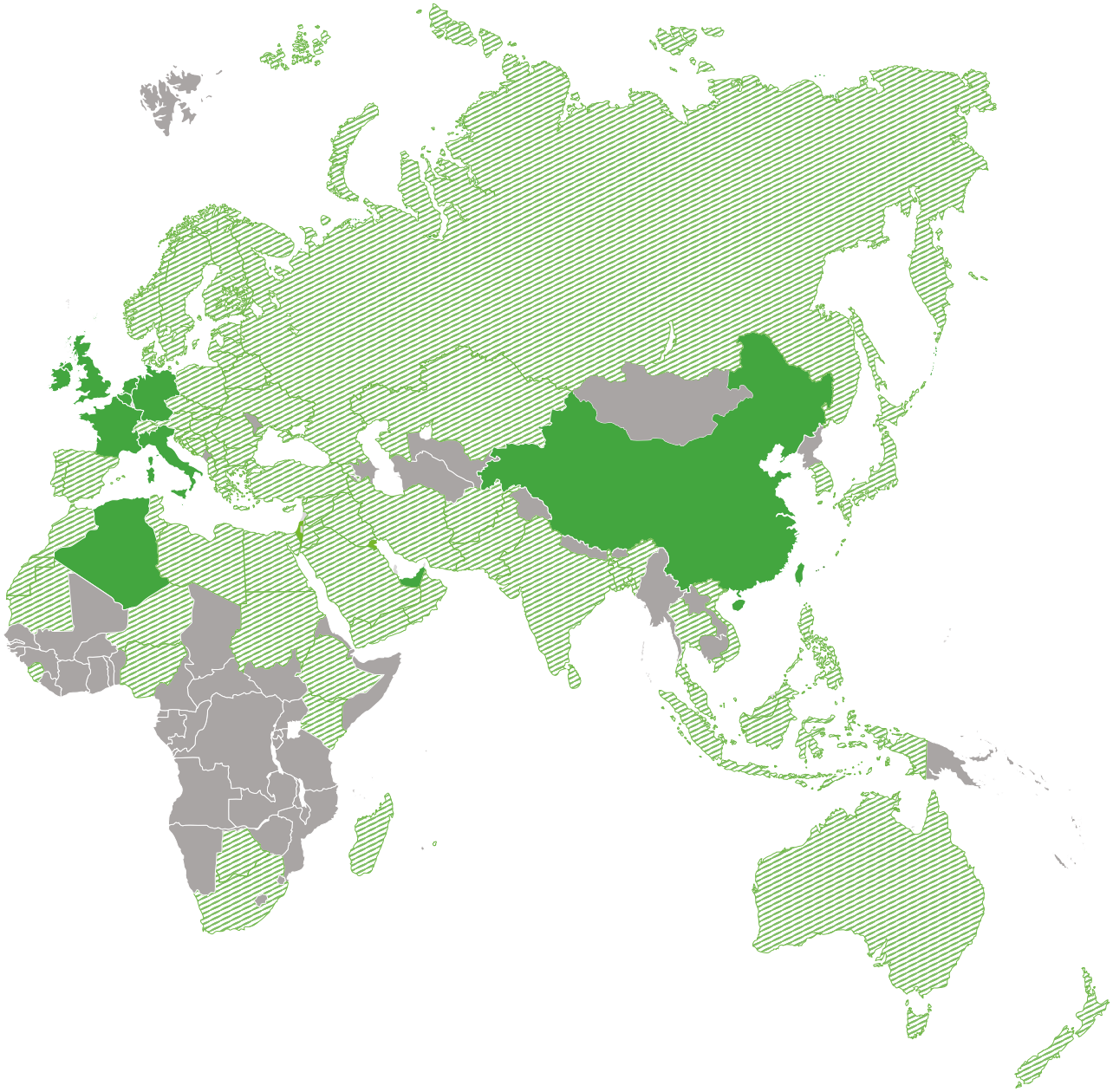
**100% MADE IN ITALY**
All our products are 100% Made in Italy

5 YEARS WARRANTY

**WARRANTY**
5 years warranty for our dosing pumps and controllers.
*Terms and conditions apply*

## Emec Worldwide

And all with the same objective: *to make the lives of companies and professionals increasingly simple.*



### OUR CERTIFICATIONS

### OUR SOCIAL CHANNELS

# Polymer Dosing Systems for Powder and Emulsions

**Powder polyelectrolyte preparation and dosing systems** represent a fundamental solution in modern water treatment processes, both i**n municipal and industrial applications**. The use of flocculant polymers improves the efficiency of clarification–flocculation, sedimentation and sludge dewatering processes, ensuring higher treated water quality and a reduction in the volume of sludge produced.

These solutions are applied in drinking water plants, wastewater treatment facilities and industrial processes where **high process stability** and p**recise dosing control** are required. Automatic preparation systems starting from dry polymers allow **constant-concentration solutions** to be obtained, reducing **chemical product waste** and improving **plant operational continuity.**

The use of **compact and modular units**, such as the automatic powder polyelectrolyte preparation systems presented in this section, allows production capacity to be easily adapted to plant requirements. Integrated automation ensures **dosing precision**, r**educed energy and chemical consumption**, **simplified maintenance** and **enhanced operator safety**.

**High flexibility in component handling** and **ease of assembly and installation**. The pre-molded tanks, designed to ensure structural strength while maintaining a low weight, facilitate transport and positioning operations **even in confined plant spaces**. The single tank has an approximate **weight of 70 kg**; the first tank complete with accessories reaches approximately 100 kg, while additional tanks, complete with accessories, weigh around 120 kg. This configuration enables **fast installation**, **reduced lifting requirements**, and **simplified logistics management**, decreasing commissioning time and overall installation costs.

# TetraMix

**Modular automatic system for the preparation and dosing of polyelectrolytes**

## GENERAL DESCRIPTION

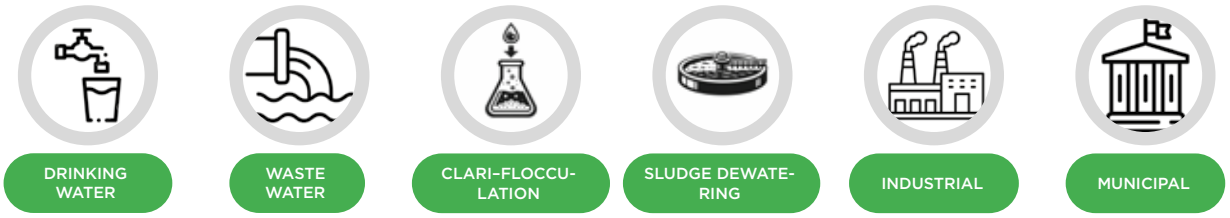
**TetraMix** is a **compact and fully automatic system** for the continuous preparation and dosing of polyelectrolyte solutions from **dry polymers and emulsions**.

The use of polyelectrolytes increases the sedimentation rate, improves clarified water quality, reduces filtration time and increases the production of dewatered sludge.

The **modular structure** allows the production capacity to be adapted to plant requirements, ensuring **operational continuity**, **high dosing accuracy**, **reduced chemical consumption** and **low installation costs**.

As a compact system, it is **completely pre-assembled**.

## APPLICATION FIELDS




## MAIN FUNCTIONS

- Expandable modular architecture
- Automatic proportional dosing
- Reduced energy consumption
- Simplified maintenance
- Operating status alarms

## SYSTEM COMPONENTS

- Radar level sensors for solution and powder
- Electronic ultrasonic flow meter
- Vibrator on the powder dosing hopper
- Powder feeder with brushless motor drive
- Brushless mixers (single and double 400 mm impeller)
- Solenoid valve for preparation water shut-off
- Touch Screen HMI 7”
- Ethernet Modbus TCP/IP

## AVAILABLE MODELS

| Tank* | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Type / Model | | PLD 1500-1 | PLD 3000-2 | PLD 4500-3 | PLD 6000-4 |
| Total Volume (lt) | | 1.702 | 3.404 | 5.106 | 6.808 |
| Max hourly prod. (l/h) 0,05-0,5% | 45′ | 1.875 | 3.750 | 5.625 | 7.500 |
| | 60′ | 1.500 | 3.000 | 4.500 | 6.000 |

* Tank dimensions (mm): 1400x1400xh1200

## TECHNICAL SPECIFICATIONS

| Parameter | Value |
|---|---|
| Solution concentration | 0,05 – 0,5 % |
| Maximum viscosity | 2.500 mPas |
| Loading hopper volume | 35 lt |
| Materials | PEHD – PPH – PVC – AISI 304 |
| Tank material | PEHD |
| Power supply | 230 Vac – 50/60 Hz |
| Power consumption | 400 W (200 W secondary tanks) |
| Operator interface | HMI Touch Screen 7” (IP65) |
| Communication | Ethernet TCP/IP |

## CONTROL MODES

- Manual
- Proportional automatic
- Setpoint management via HMI
- Ethernet TCP/IP

## CONFIGURATIONS AND ACCESSORIES

| Dosing pumps / Accessories | Level sensors | Measuring instruments | Spare parts and maintenance |
|---|---|---|---|
| Compatible with electromagnetic, stepper, or motor-driven transfer pumps.<br><br>2” connections. | 4–20 mA radar level sensor for powders and solutions, with alarm and automatic shut-off functions. | • Electronic water flow meter. | All components related to:<br>• Preparation water circuit<br>• Powder dosing unit<br>• Dissolver components<br>• Dissolver tank<br>• Mixer |

# TECHNICAL SCHEMATICS AND DIAGRAMS

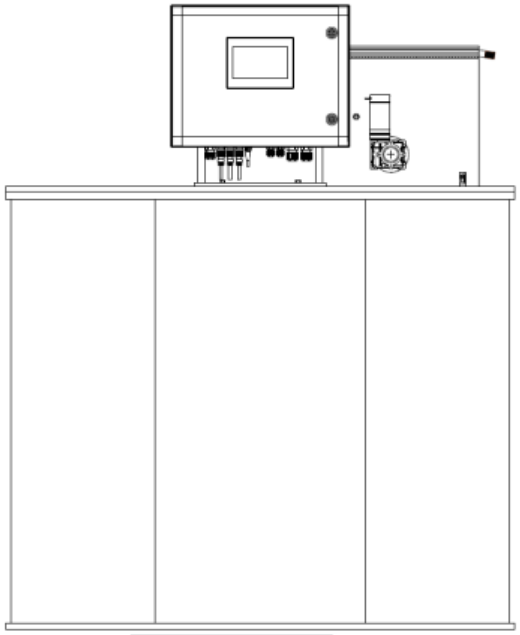


Fig. 1 - Instrumentation panel

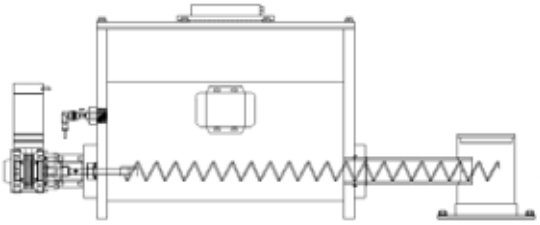


Fig. 2 - Feed screw conveyor

Fig. 3 - Monitor HMI

# PERMANGANATE DOSING SYSTEMS *(POWDER SYSTEMS)*

-

*Technologies for controlled oxidation and optimization of industrial processes*

The use of powder oxidants in water treatment processes represents an effective and flexible solution for applications requiring product stability, reduced transport volumes and on-site preparation of the working solution. Proper management of the dissolution, concentration and dosing phases is essential to ensure operational accuracy and treatment continuity.

The Permanganate Line solutions dedicated to powder products are designed to automate the entire preparation cycle, from loading and dissolution to proportional dosing of the resulting solution. The integration of concentration control systems, flow meters, level sensors and supervision interfaces allows process parameters to remain constant while minimizing manual intervention.

These technologies are applied in drinking water plants and industrial processes where selective and reliable oxidation is required, with particular attention to operator safety during loading and powder handling operations.

Thanks to compact, modular and pre-assembled units, powder oxidant systems allow production capacity to be easily adapted to plant requirements, optimize chemical consumption and ensure consistent performance over time. Optional integration with residual monitoring systems enables complete control of the entire oxidation process.

# PermaDos

**Compact automatic system for preparation, dosing and monitoring of Potassium Permanganate ($KMnO_4$)**

## GENERAL DESCRIPTION

PermaDos is a compact and fully automatic system for the preparation, dosing and continuous monitoring of ready-to-use Potassium Permanganate solutions from powder components.

Potassium Permanganate is mainly used in drinking water as a pre-oxidant for the reduction of organic substances, reduction of trihalomethane precursors, oxidation of iron and manganese, algae control and hydrogen sulfide removal.

PermaDos integrates concentration control, flow measurement and level management functions, ensuring operational accuracy and service continuity in water treatment processes.

Compact and fully pre-assembled system.

The system can be integrated with PermaTest (see dedicated section), a solution for continuous residual analysis, providing complete control of the oxidation process.

## APPLICATION FIELDS

DRINK. WATER TREAT. PLANTS

WASTE WATER

IRON AND MANGANESE OXIDATION

INDUSTRIAL

GROUNDWATER

REDUCTION OF ORGANIC SUBSTANCES

ODOR REMOVAL

## AVAILABLE MODELS

**PermaDos is available in 2 models:**

- PermaDos CB (Free Flowing type)
- PermaDos SE (Technical Grade type, also Free Flowing)

Tank dimensions (mm): 1400 × 1400 × h1200

## MAIN FUNCTIONS

- Continuous operation mode and PWM pulse mode (from concentration probe signal)
- Manual/automatic operating mode
- Setting of the following parameters:
  - Operating setpoint
  - Flow rate control
  - Analog signal
  - High and low concentration alarm limits
  - Preparation water flow alarm limits
  - Solution level alarm
- Active alarms and reset modes
- Calibration of pumps, probes and sensors
- Automatic level management
- Configuration of operating phases

## COMMON COMPONENTS

- Concentration meter
- 35 L polypropylene loading hopper (approx. 60 kg of permanganate)
- Stainless steel screw coated with anti-adhesive plastic material
- Screw drive with constant-torque brushless motor
- Polypropylene screw tube
- Safety system allowing access to the screw only when the machine is stopped
- Powder level controller
- Hopper vibrator
- Molded PE-HD tank with safety cover
- Preparation water regulation device:
  - Manual regulation and shut-off valve
  - Solenoid valve
  - Plexiglass flow meter
  - Electronic flow meter
- Laser level controller
- Mixer agitator with constant-torque brushless motor
- Concentration analyzer and controller
- Program control for 2 dosing pumps
- ABS electrical cabinet IP65
- HMI with color touch screen panel
- Powder dosing unit with PID control
- Modbus Ethernet TCP/IP communication protocol

## SPECIFIC COMPONENTS

### PERMADOS CB

- Skid equipped with 2 dosing pumps according to customer requirements
- AISI 304 support frame for housing 1000 kg Potassium Permanganate IBC tanks
- Load cells for measuring the quantity of permanganate inside the IBC tanks

### PERMADOS SE

- No. 1 safety box for 180° tipping of 25 kg buckets (Industrial Grade or Technical Grade type)
- Skid equipped with 2 dosing pumps according to customer requirements

## TECHNICAL SPECIFICATIONS

| Parameter | Model / Value | |
|---|---|---|
| | CB | SE |
| Solution production | 400 – 1.000 \| 2.000 \| 3.000 l/h | |
| Solution concentration | 1 – 50 g/l | |
| Feed water pressure | 2-4 bar | |
| Operating pressure | * depending on the dosing pumps | |
| Power supply | 230 Vac – 50 Hz \| 24 Vdc | |
| Power consumption | 1.200 W | 600 W |
| Tank materials | PE-HD | |
| Communication | Ethernet Modbus TCP/IP | |
| Integrated sensors | Concentration (g/l) | |
| Operator interface | HMI Touch Screen 7” (IP65) | |

## CONTROL MODES

- Proportional automatic
- Manual
- PID algorithm
- 4–20 mA analog signal
- Ethernet Modbus TCP/IP

## CONFIGURATIONS AND ACCESSORIES

| Dosing pumps / Accessories | Level sensors | Measuring instruments | Spare parts and maintenance |
|---|---|---|---|
| Skid equipped with 2 diaphragm pumps from the Prisma and Prius series with automatic regulation.<br><br>Box for 25 kg buckets (see dedicated section). | Ultrasonic sensors for low, high and maximum solution level. | $KMnO_4$ concentration probe, electronic flow meter and level meter. | Original probes, screws and sensors available, components for:<br>• preparation water circuit<br>• powder dosing unit<br>• dissolver components<br>• solution dosing components |

# DOSING PUMPS – SPECIFICATIONS

PRISMA SERIES

| Description | Flow rate (l/h) | Pressure (bar) |
|---|---|---|
| PRISMA 2001 EP 90-240V MODBUS | 1 | 20 |
| PRISMA 2502 EP 90-240V MODBUS | 2 | 25 |
| PRISMA 2005 EP 90-240V MODBUS | 5 | 16 |
| PRISMA 167,5 EP 90-240V MODBUS | 7,5 | 16 |
| PRISMA 1013 EP 90-240V MODBUS | 13 | 10 |
| PRISMA 0720 EP 90-240V MODBUS | 20 | 7 |
| PRISMA 0528 EP 90-240V MODBUS | 28 | 5 |
| PRISMA 0450 EP 90-240V MODBUS | 50 | 4 |
| PRISMA 0280 EP 90-240V MODBUS | 80 | 2 |

PRIUS SERIES

| Description | Flow rate (l/h) | Pressure (bar) |
|---|---|---|
| PRIUS D MF 10-12 | 12 | 10 |
| PRIUS D MF 10-16 | 16 | 10 |
| PRIUS D MF 10-21 | 21 | 10 |
| PRIUS D MF 10-24 | 24 | 10 |
| PRIUS D MF 10-30 | 30 | 10 |
| PRIUS D MF 7-32 | 32 | 7 |
| PRIUS D MF 10-42 | 42 | 10 |
| PRIUS D MF 5-48 | 48 | 5 |
| PRIUS D MF 10-56 | 56 | 10 |
| PRIUS D MF 10-60 | 60 | 10 |
| PRIUS D MF 7-64 | 64 | 7 |
| PRIUS D MF 5-70 | 70 | 5 |
| PRIUS D MF 7-86 | 86 | 7 |
| PRIUS D MF 5-88 | 88 | 5 |
| PRIUS D MF 5-96 | 96 | 5 |
| PRIUS D MF 10-105 | 105 | 10 |
| PRIUS D MF 5-106 | 106 | 5 |
| PRIUS D MF 5-128 | 128 | 5 |
| PRIUS D MF 5-140 | 140 | 5 |
| PRIUS D MF 5-141 | 141 | 5 |
| PRIUS D MF 7-160 | 160 | 7 |
| PRIUS D MF 5-176 | 176 | 5 |
| PRIUS D MF 5-180 | 180 | 5 |
| PRIUS D MF 5-188 | 188 | 5 |
| PRIUS D MF 5-212 | 212 | 5 |
| PRIUS D MF 5-236 | 236 | 5 |
| PRIUS D MF 5-240 | 240 | 5 |
| PRIUS D MF 5-284 | 284 | 5 |
| PRIUS D MF 5-290 | 290 | 5 |
| PRIUS D MF 5-350 | 350 | 5 |
| PRIUS D MF 5-380 | 380 | 5 |
| PRIUS D MF 5-390 | 390 | 5 |
| PRIUS D MF 5-440 | 440 | 5 |
| PRIUS D MF 4-520 | 520 | 4 |
| PRIUS D MF 5-530 | 530 | 5 |
| PRIUS D MF 3-750 | 750 | 3 |
| PRIUS D MF 2-1000 | 1000 | 2 |
| PRIUS D MF 5-1000 | 1000 | 5 |

# TECHNICAL SCHEMATICS AND DIAGRAMS

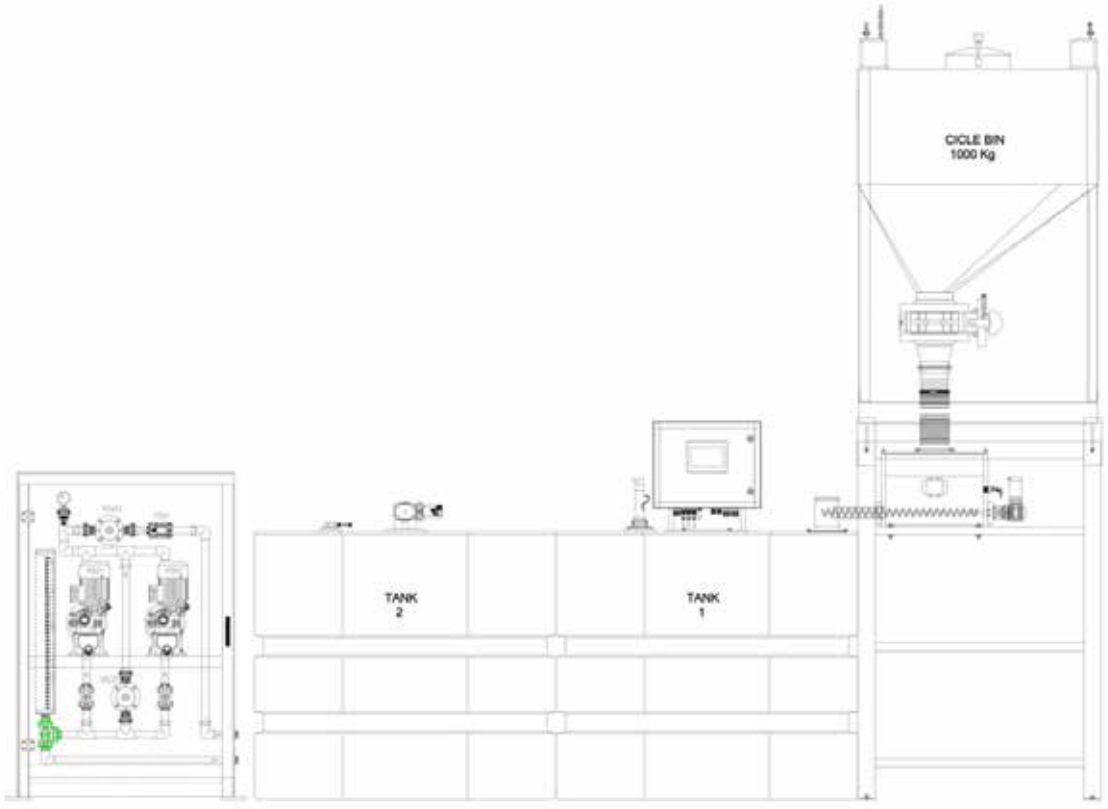



Fig. 1 - PermaDos CB Diagram + Skid Safety Box

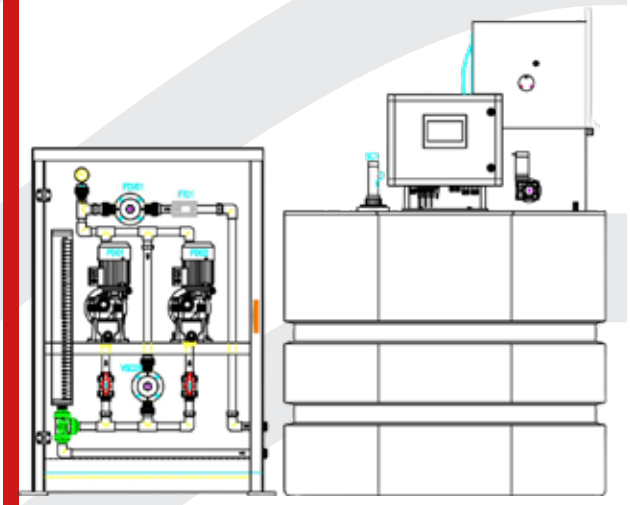


Fig. 2 - PermaDos SE Diagram + Skid Safety Box

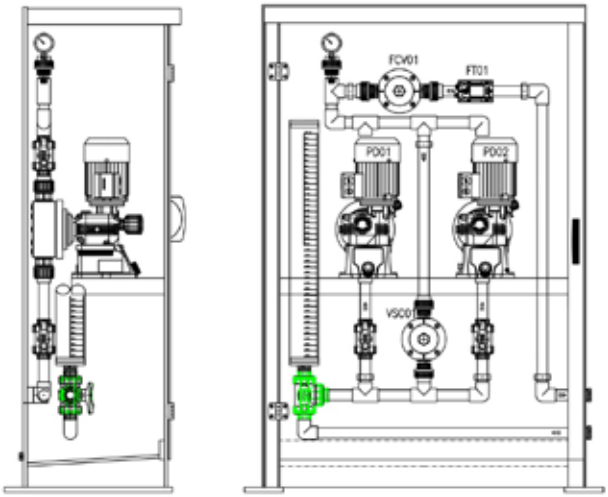



Fig. 3 - Skid Safety Box

# HDPE Box

**Accessory for the preparation and dosing of potassium permanganate**

## GENERAL DESCRIPTION

The HDPE Box is a safety container designed for the controlled emptying of 25 kg potassium permanganate buckets into the preparation hopper.

The system is equipped with a manual 180° tipping mechanism, allowing gradual and safe discharge of the powder while preventing dispersion into the environment.

## MAIN FUNCTIONS

- Safety box for 25 kg permanganate buckets
- Manual 180° tipping system
- Controlled discharge of powder into the hopper
- Reduction of powder dispersion
- Operator protection during loading operations
- Safety window with magnetic locking

# TECHNICAL SPECIFICATIONS

| Parameter | Value |
|---|---|
| Bucket capacity | 25 kg |
| Rotation system | Manual, 180° |
| Function | Powder discharge into hopper |
| Installation | Above the loading hopper |
| Operating temperature | +5 °C to +40 °C |

# PERMANGANATE DOSING SYSTEMS (*LIQUID SOLUTIONS*)

-

*Technologies for oxidation using Sodium Permanganate ($NaMnO_4$) and Potassium Permanganate ($KMnO_4$)*

The use of permanganate-based oxidants in water treatment processes represents an effective solution for the selective oxidation of contaminants, iron and manganese control, and the improvement of water quality in municipal and industrial applications. Precise, flow-proportional dosing is essential to ensure treatment effectiveness and prevent over- or under-dosing.

The Permanganate Line (Skid) includes compact and fully automatic systems designed for the controlled dosing of liquid solutions, with flow-proportional regulation and touch screen panel management. The integration of flow meters, level sensors and PID controls enables accurate application of the oxidizing product and continuous monitoring of operating conditions.

These solutions are suitable for drinking water treatment plants, groundwater treatment, industrial applications and processes requiring high reliability, dosing accuracy and operational continuity.

Thanks to the skid configuration, compact structure and protection rating suitable for plant environments, the Permanganate Line systems ensure ease of installation, integration into supervision systems and maximum operational safety. Optional integration with residual monitoring systems enables complete and optimized control of the oxidation process.

# PDS
# (Permanganate Dosing System)

**Sistema compatto e automatico per dosaggio di Permanganato**

## AVAILABLE MODELS

**PDS(K)** - Potassium Permanganate Dosing System
**PDS(Na)** - Sodium Permanganate Dosing System

## GENERAL DESCRIPTION

The PDS – Permanganate Dosing System is a compact and fully automatic system designed for the preparation and continuous dosing of Sodium Permanganate ($NaMnO_4$) and Potassium Permanganate ($KMnO_4$) solutions, starting from liquid solutions, for drinking water or industrial applications.

It is designed for applications where reliability, dosing accuracy and operational continuity are required.

The system allows flow-proportional regulation and automatic management of the oxidizing product via touch screen panel.

The system can be integrated with PermaTest (see dedicated section), a solution for continuous residual analysis, ensuring complete control of the oxidation process.

## APPLICATION FIELDS

DRINK. WATER TREAT. PLANTS

ENVIRONMENTAL REMEDIATION

IRON AND MANGA-NESE OXIDATION

INDUSTRIAL

GROUN-DWATER

## MAIN FUNCTIONS

- Permanganate dosing setting in mg/L
- Automatic flow-proportional dosing
- Automatic calibration of dosing pumps
- Manual mode with set flow rate
- Flow-proportional control via 4–20 mA signal
- PID control with integrated flow meter
- PID control of dosing pumps
- Flow monitoring and process alarms

## SYSTEM COMPONENTS

- Compact system for floor installation
- HMI Touch Screen 7”
- Integrated ultrasonic flow meter
- Reagent level sensor with automatic shut-off
- Structure with IP65 protection rating
- Ethernet Modbus TCP/IP

## TECHNICAL SPECIFICATIONS

| Parameter | Value |
|---|---|
| Power supply | 230 Vac ±10% – 50/60 Hz |
| Power consumption | Approx. 100 W |
| Protection rating | IP65 NEMA 4 |
| HMI display | 7” Touch Screen |
| Inputs | - 4–20 mA analog flow signal<br>- Remote Start/Stop<br>- Level alarm |
| Operating temperature | 0 ÷ 40 °C |

## CONTROL MODES

- Proportional automatic (4–20 mA)
- Manual
- External digital Start/Stop
- Ethernet Modbus TCP/IP

## CONFIGURATIONS AND ACCESSORIES

| Dosing pumps | Level sensors | Measuring instruments | Spare parts and maintenance |
|---|---|---|---|
| Dosing diaphragm pumps with stepper motor, PVDF pump head and Modbus control. | Low-level reagent probe with automatic dosing shut-off. | Integrated ultrasonic flow meter and pressure control gauges. | Pump head kits, membranes, valves and original spare parts available for scheduled maintenance. |

# DOSING PUMPS – SPECIFICATIONS

PRISMA SERIES

| Description | Flow rate (l/h) | Pressure (bar) |
|---|---|---|
| PRISMA 2001 EP 90-240V MODBUS | 1 | 20 |
| PRISMA 2502 EP 90-240V MODBUS | 2 | 25 |
| PRISMA 2005 EP 90-240V MODBUS | 5 | 16 |
| PRISMA 167,5 EP 90-240V MODBUS | 7,5 | 16 |
| PRISMA 1013 EP 90-240V MODBUS | 13 | 10 |
| PRISMA 0720 EP 90-240V MODBUS | 20 | 7 |
| PRISMA 0528 EP 90-240V MODBUS | 28 | 5 |
| PRISMA 0450 EP 90-240V MODBUS | 50 | 4 |
| PRISMA 0280 EP 90-240V MODBUS | 80 | 2 |

PRIUS SERIES

| Description | Flow rate (l/h) | Pressure (bar) |
|---|---|---|
| PRIUS D MF 10-12 | 12 | 10 |
| PRIUS D MF 10-16 | 16 | 10 |
| PRIUS D MF 10-21 | 21 | 10 |
| PRIUS D MF 10-24 | 24 | 10 |
| PRIUS D MF 10-30 | 30 | 10 |
| PRIUS D MF 7-32 | 32 | 7 |
| PRIUS D MF 10-42 | 42 | 10 |
| PRIUS D MF 5-48 | 48 | 5 |
| PRIUS D MF 10-56 | 56 | 10 |
| PRIUS D MF 10-60 | 60 | 10 |
| PRIUS D MF 7-64 | 64 | 7 |
| PRIUS D MF 5-70 | 70 | 5 |
| PRIUS D MF 7-86 | 86 | 7 |
| PRIUS D MF 5-88 | 88 | 5 |
| PRIUS D MF 5-96 | 96 | 5 |
| PRIUS D MF 10-105 | 105 | 10 |
| PRIUS D MF 5-106 | 106 | 5 |
| PRIUS D MF 5-128 | 128 | 5 |
| PRIUS D MF 5-140 | 140 | 5 |
| PRIUS D MF 5-141 | 141 | 5 |
| PRIUS D MF 7-160 | 160 | 7 |
| PRIUS D MF 5-176 | 176 | 5 |
| PRIUS D MF 5-180 | 180 | 5 |
| PRIUS D MF 5-188 | 188 | 5 |
| PRIUS D MF 5-212 | 212 | 5 |
| PRIUS D MF 5-236 | 236 | 5 |
| PRIUS D MF 5-240 | 240 | 5 |
| PRIUS D MF 5-284 | 284 | 5 |
| PRIUS D MF 5-290 | 290 | 5 |
| PRIUS D MF 5-350 | 350 | 5 |
| PRIUS D MF 5-380 | 380 | 5 |
| PRIUS D MF 5-390 | 390 | 5 |
| PRIUS D MF 5-440 | 440 | 5 |
| PRIUS D MF 4-520 | 520 | 4 |
| PRIUS D MF 5-530 | 530 | 5 |
| PRIUS D MF 3-750 | 750 | 3 |
| PRIUS D MF 2-1000 | 1000 | 2 |
| PRIUS D MF 5-1000 | 1000 | 5 |

# TECHNICAL SCHEMATICS AND DIAGRAMS

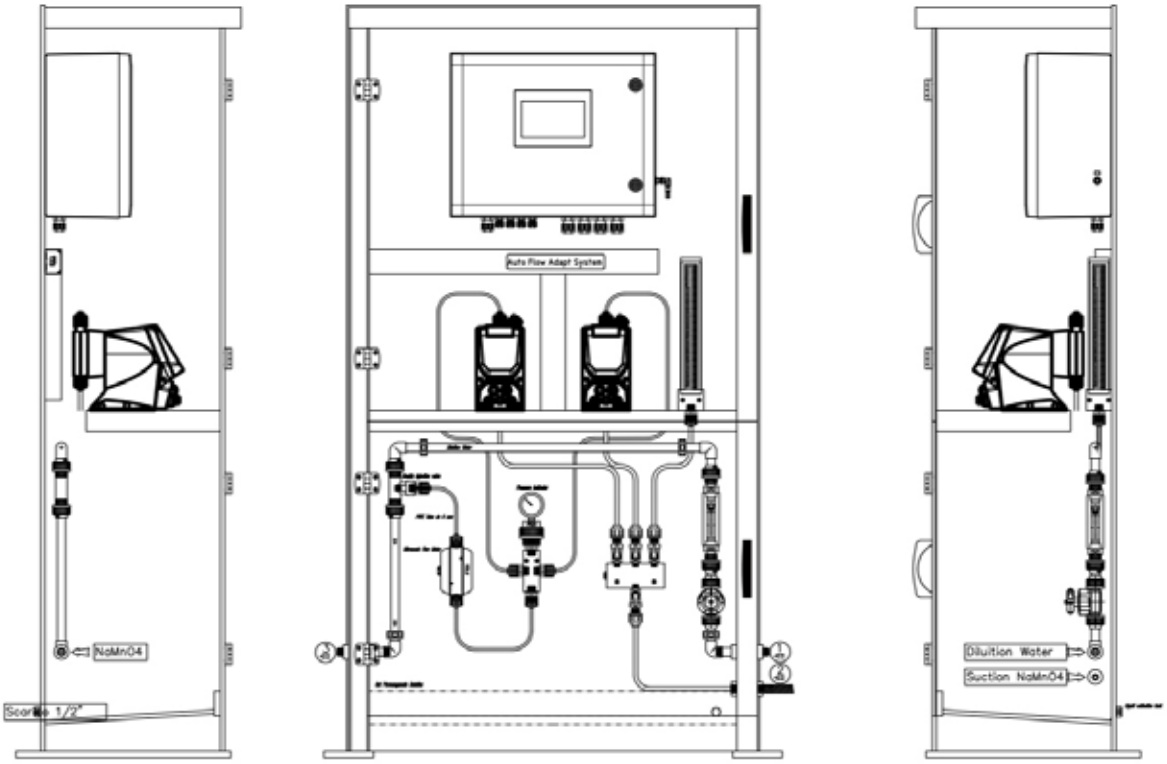



Fig. 1 - Instrumentation panel

Fig. 2 - Monitor HMI

Fig. 3 - Flow meter

# Residual Permanganate Monitoring and Control System

Monitoring of residual oxidant represents a strategic phase in water treatment processes, both in municipal and industrial applications. Continuous and reliable control makes it possible to verify the effectiveness of oxidation stages, optimize reagent dosing and maintain constant process parameters, contributing to treated water quality and reduced operating costs.

Continuous analysis solutions enable automatic in-line measurement of parameters, with programmed cycles of sampling, stabilization and data acquisition. The integration of selective electrochemical technologies ensures accuracy, repeatability and long-term stability, even under variable operating conditions.

Automation of analysis sequences, controlled sample conditioning and integrated alarm management ensure service continuity and result reliability. Standard analog outputs and industrial communication protocols allow easy integration into plant supervision and control systems.

Continuous residual oxidant analysis allows:

- Verify treatment efficiency
- Monitor strategic process points
- Prevent over- or under-dosing
- Improve optimization of chemical consumption

Thanks to compact, pre-assembled and easy-to-install solutions, residual oxidant monitoring systems are easily integrated into existing plants, providing precise and real-time process control with high standards of safety, reliability and data traceability.

# PermaTest
## (Permanganate Scan System)

**Compact / automatic system for online measurement of residual permanganate**

## GENERAL DESCRIPTION

PermaTest is a compact and automatic system designed for the continuous measurement of residual permanganate ($MnO_4^-$) in drinking or industrial water.

The instrument uses an electrochemical measuring cell with selective electrodes and provides analog outputs and Ethernet communication for integration into control systems.

Residual permanganate monitoring is a key parameter in water treatment processes, particularly when oxidants such as Potassium Permanganate ($KMnO_4$) or Sodium Permanganate ($NaMnO_4$) are used.

Both compounds perform a selective oxidizing function but require accurate dosing control to avoid overdosing (which may cause pink coloration of the water or formation of by-products) or underdosing (resulting in reduced treatment effectiveness).

In this context, PermaTest serves as a strategic continuous monitoring tool, enabling precise and reliable in-line measurement of residual permanganate.

## APPLICATION FIELDS

DRINK. WATER TREAT. PLANTS

WASTE WATER

IRON AND MANGA-NESE OXIDATION

INDUSTRIAL

MONITO-RING

## MAIN FUNCTIONS

- Automatic sampling with programmable sequence
- Continuous measurement of residual permanganate
- Programmable automatic batch system
- Acid injection and sample stabilization
- Measurement and storage of the value
- Process timer management
- Automatic two-point calibration
- Analog output configuration
- Fast analysis time (approx. 30 seconds)
- Compact system for bench installation
- General alarm and threshold management

## SYSTEM COMPONENTS

- Galvanically isolated 4–20 mA analog outputs
- Color Touch Screen display

## CONTROL MODES

- Proportional automatic (4–20 mA)
- Manual
- External digital Start/Stop
- Ethernet Modbus TCP/IP

## TECHNICAL SPECIFICATIONS

| Parameter | Value |
|---|---|
| Measuring range | 0.000 – 10.000 ppm |
| Analysis time | 30 seconds |
| Analog outputs | No. 2 (4–20 mA) |
| Digital inputs | No. 1 (Sampling via probe) |
| Digital outputs | No. 1 (General alarm) |
| Power supply | 100–230 Vac ±10%, 50/60 Hz |
| Display | Color Touch Screen 4” |
| Protection rating | IP55 |
| Operating temperature | 0 – 40 °C |
| Weight | Approx. 5 kg |
| Dimensions | 655 × 630 × Depth 330 mm |

## CONFIGURATIONS AND ACCESSORIES

| Pumps | Level sensors | Measuring instruments | Spare parts and maintenance |
|---|---|---|---|
| Peristaltic pumps with stepper motor. | - | Electrochemical measurement with selective electrode. | • PharMed® BPT peristaltic tubing.<br>• Measuring and calibration beaker.<br>• Pinch solenoid valves. |

# TECHNICAL SCHEMATICS AND DIAGRAMS

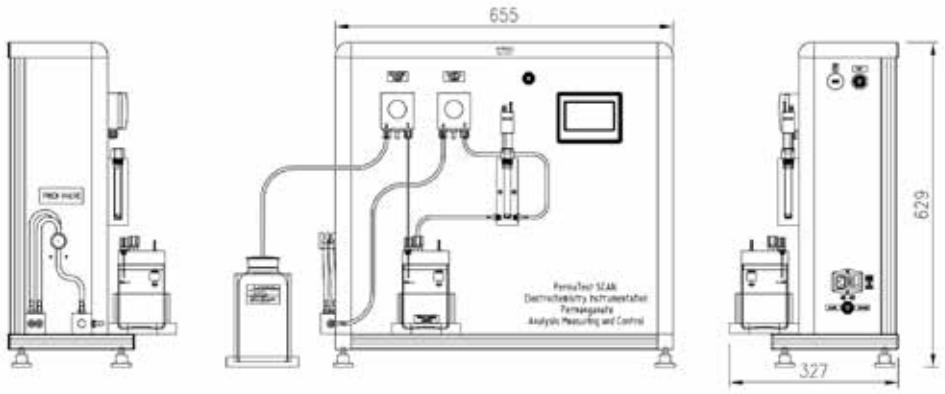



Fig. 1 - Instrumentation panel

Fig. 2 - Monitor HMI

Fig. 3 - Measuring electrode

# Disinfection Systems

Disinfection systems represent a critical phase in water treatment processes, for both civil and industrial applications. Increasing attention to microbiological risks, water quality and regulatory compliance has led to the adoption of on-site generation and controlled dosing technologies for oxidizing and disinfecting agents.

Solutions such as chlorine dioxide generators and permanganate dosing plants ensure high effectiveness against bacteria, viruses and biofilm, while maintaining precise control of disinfection by-products. These technologies are widely used in drinking water treatment plants, distribution networks, cooling towers, healthcare facilities, food industries and process applications.

Automatic generation and dosing systems ensure continuous production of the disinfectant in the required quantities, eliminate the need for storing concentrated or unstable products and increase operational safety levels. Flow-proportional control, integration with process sensors and remote monitoring functions allow constant parameter control, optimized chemical consumption and guaranteed operational continuity.

Thanks to compact, pre-assembled solutions that are easily integrated into existing plants, modern disinfection systems provide high reliability, ease of management and effective control of microbiological risk throughout the entire water cycle.

# Chlorine Dioxide Line

-

*Technologies for disinfection using Chlorine Dioxide ($ClO_2$)*

The use of Chlorine Dioxide ($ClO_2$) in water treatment processes represents a well-established solution for ensuring high microbiological effectiveness and accurate control of disinfection by-products. Growing attention to public health safety, distributed water quality and regulatory compliance has led to the adoption of on-site generation and dosing systems capable of ensuring operational continuity and application precision.

The Chlorine Dioxide Line solutions are designed for controlled production and proportional dosing of the disinfectant, avoiding the storage of concentrated or unstable solutions. The integration of automatic control systems, process sensors and industrial communication interfaces enables continuous monitoring of operating parameters, ensuring stability and safety.

These technologies are applied in drinking water treatment plants, distribution networks, cooling towers, healthcare facilities, food industries and process applications, where effective microbiological risk control and optimized chemical consumption management are required.

Thanks to compact, pre-assembled solutions that are easily integrated into existing plants, the Chlorine Dioxide Line systems ensure reliability, ease of management and flow-proportional control, helping maintain high quality standards throughout the entire water cycle.

# Lotus
## (Chlorine Dioxide Generator)

**Compact and automatic system for Chlorine Dioxide ($ClO_2$) dosing**

## GENERAL DESCRIPTION

The use of chlorine dioxide in water treatment stems from increased awareness of biological health risks. LOTUS chlorine dioxide generators are used for the control of microorganisms in a wide range of applications and are highly recommended for the control, reduction and prevention of Legionella risk in hot and cold water systems.

Microorganisms are safely eliminated within 5 minutes.

LOTUS disinfection systems are reliable and safe, as they are designed so that chlorine dioxide ($ClO_2$) is not handled in gaseous form. Two liquid chemical precursors, Hydrochloric Acid (HCl) and Sodium Chlorite ($NaClO_2$), react with each other to produce the required chlorine dioxide, thus preventing the presence of gaseous $ClO_2$ or concentrated solutions outside the production process.

Its elegant cover preserves the cleanliness and integrity of the internal components.

With EMEC's Nimbus online control system, it is possible to interact with LOTUS systems through a simple yet powerful web interface.

## APPLICATION FIELDS

## MAIN FUNCTIONS

- Series production of chlorine dioxide
- $ClO_2$ dosing in different modes
- Alarms: chemicals, water, emptying
- Water meter input
- Stand-by input
- Real-time production data
- Monitoring of pumps and SEFL flow sensors
- NIMBUS communication
- Flow control input (flow alarm)
- Tank level controls (level alarm)
- USB data logger (optional)
- Ethernet module (optional)
- Internal GSM modem (optional)
- MODBUS module (optional)
- WIFI module (optional)
- Measurement and control of $ClO_2$ concentration in water
- mA output
- Gas detection sensor (optional)

## SYSTEM COMPONENTS

- Dosing pumps for HCl (red), $NaClO_2$ (blue) and $ClO_2$ (green)
- MFKT/V multifunction valve for pressure regulation, safety, anti-siphon and venting
- Dual chamber: reaction and storage Activated carbon filter
- ASA or fiberglass enclosure
- IP65 (NEMA 4X) protection for the control unit and LOTUS pumps
- Rotary control knob for easy programming

## AVAILABLE MODELS

| Model | Max flow rate $ClO_2$ | Max chem. consump.* | Chemical product concent. | Reactor | Max pres. (feed water)** | Max operating pressure*** |
|---|---|---|---|---|---|---|
| AIR 10 | 10 g/h | 0,25 l/h | 9% HCl 7,5% NaClO | PVC | 2 bar | 8 bar |
| AIR 30 | 30 g/h | 0,75 l/h | | | 3 bar | 5 bar |
| AIR 60 | 60 g/h | 1,5 l/h | | | 3 bar | 5 bar |

* Referred to a single reagent (multiply by two to obtain the total consumption in liters/hour)
** Depending on the system pressure (max 8 bar)
*** For higher pressures, use an external pump

## TECHNICAL SPECIFICATIONS

| Parameter | Value |
|---|---|
| Concentration $ClO_2$ | 2 g/l |
| Operating temperature | 0-45°C (32-110°F) |

## CONTROL MODES

- Automatic
- Manual
- Ethernet Modbus TCP/IP
- USB data logger (optional)
- Ethernet module (optional)
- Internal GSM modem (optional)
- MODBUS module (optional)
- WIFI module (optional)

## CONFIGURATIONS AND ACCESSORIES

| Dosing pumps | Level sensors | Measuring instruments | Spare parts and maintenance |
|---|---|---|---|
| Three diaphragm dosing pumps. | Level probe. | Gas detection sensor (optional). | • Activated carbon filter<br>• Reaction tank<br>• Storage tank<br>• Solenoid valves<br>• Injection valves |

## TECHNICAL SCHEMATICS AND DIAGRAMS

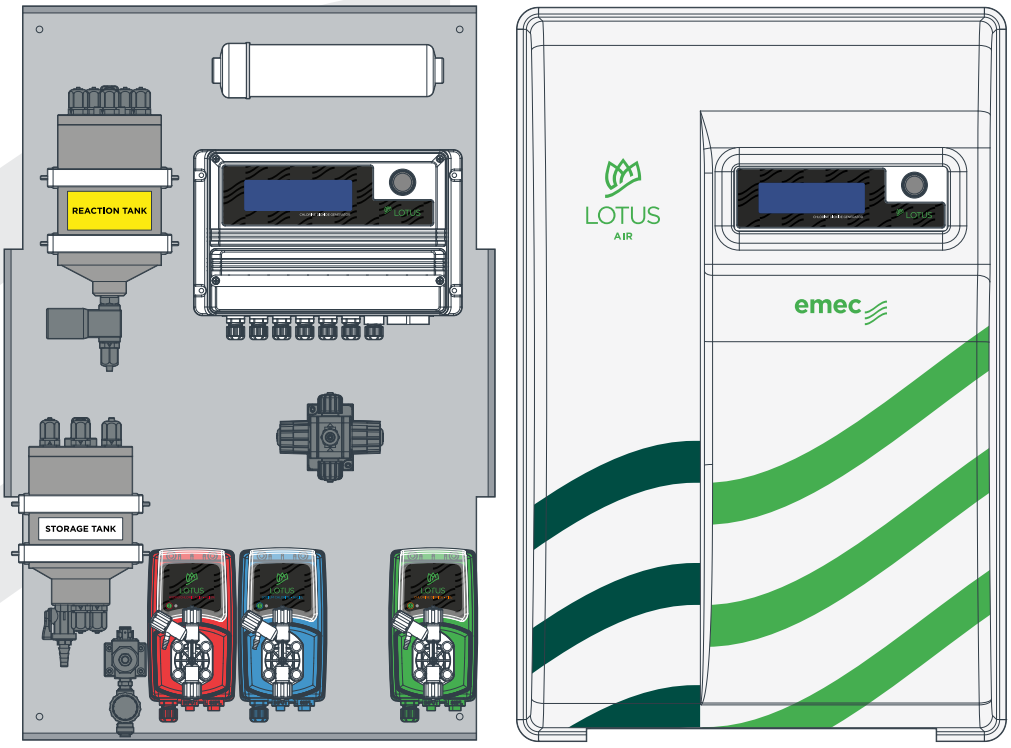



Fig. 1 - Cover and internal components of the unit

# MULTI-CHEMICAL LINE

-

*Technologies for disinfection using multi-chemical components*

A multi-chemical dosing system is particularly suitable for applications requiring precise process control, stable treatment performance and optimized management of water treatment parameters. The use of integrated dosing technologies allows accurate proportioning and injection of multiple chemical components, improving treatment efficiency, operational continuity and process stability.

The Multi-chemical Dosing Line solutions are designed to ensure controlled preparation, mixing and dosing of different chemical reagents, with flow-proportional operation and automatic management of operating parameters. The integration of advanced control systems enables the set dosing rates and process conditions to remain constant, preventing deviations from operating limits and ensuring compliance with treatment specifications.

These technologies are used in drinking water treatment plants, water distribution networks, wastewater treatment facilities, cooling towers, the food industry and a wide range of industrial applications where reliable, continuous and easily monitored chemical treatment is required.

The compact architecture, HMI-based management and communication with supervision systems make the Multi-Chemical Dosing Line systems easy to integrate and suitable for both new installations and retrofit projects, ensuring reliability, safety and 24/7 operational continuity.

# MDS
# (Multi-chemical Dosing System)

**Compact and automatic system for dosing multi-chemical products in aqueous solution**

## GENERAL DESCRIPTION

MDS Multi-chemical Dosing System is a compact and fully automatic unit designed for the production and continuous dosing of several chemical components.

Starting from the precursors, the system ensures precise and consistent stoichiometric dosing.

Thanks to advanced dosing control systems, MDS prevents exceedance of chemical concentration limits in treated water, ensuring 24/7 operational continuity.

## APPLICATION FIELDS

## MAIN FUNCTIONS

- Automatic stoichiometric dosing of reagents
- Concentration setting in %
- Product specific gravity setting
- Dosing pump calibration mode setting
- Automatic proportional dosing setting via signal from the water flow meter
- Manual dosing setting by entering the estimated plant flow rate
- Integrated dosing flow measurement
- Homogeneous and continuous dosing (non-pulsed)

## SYSTEM COMPONENTS

- Integrated ControlFlow system
- No. 2 self-priming electronic diaphragm dosing pumps with stepper motor
- No. 1 pressure transmitter 4–20 mA
- No. 2 pressure gauges for pump operating pressure reading
- Dilution system with electronic flow meter
- Low-level reagent sensors
- Leak collection tank
- Safety cover doors
- Integrated ultrasonic dilution system
- Color HMI Touch Screen 7”
- Reagent level sensors
- Compact PEHD structure
- Ethernet Modbus TCP/IP

## AVAILABLE MODELS*

| Model | Dosing flow rate | Pressure |
|---|---|---|
| Mod. 1 - Dosage 100 | 1.000 g/h | 10 Bar |
| Mod. 2 - Dosage 200 | 2.000 g/h | 7 Bar |
| Mod. 3 - Dosage 300 | 3.000 g/h | 5 Bar |
| Mod. 4 - Dosage 500 | 5.000 g/h | 4 Bar |

* Other models available upon request

## TECHNICAL SPECIFICATIONS

| Parameter | Value |
|---|---|
| Dosing range | 0,5 – 5 ppm |
| Power supply | 230 Vac – 50/60 Hz |
| Power consumption | 500 W |
| Protection rating | IP65 |
| Operator interface | HMI Touch Screen 7" color |
| Communication | Ethernet Modbus TCP/IP |

## CONTROL MODES

- Proportional automatic
- Manual
- 4–20 mA analog signal
- External digital Start/Stop
- Ethernet Modbus TCP/IP

# CONFIGURATIONS AND ACCESSORIES

| Dosing pumps | Level sensors | Measuring instruments | Spare parts and maintenance |
|---|---|---|---|
| Self-priming electronic diaphragm dosing pumps with stepper motor, PTFE pump heads and PVDF valves. | Low-level reagent sensors with automatic dosing shut-off. | Ultrasonic flow meter and pressure control gauges. | Maintenance kits, membranes, valves and original components available to ensure operational continuity. |

# DOSING PUMPS – SPECIFICATIONS

| Description | Flow rate (l/h) | Pressure (bar) |
|---|---|---|
| PRISMA 2001 EP 90-240V MODBUS | 1 | 20 |
| PRISMA 2502 EP 90-240V MODBUS | 2 | 25 |
| PRISMA 2005 EP 90-240V MODBUS | 5 | 16 |
| PRISMA 167,5 EP 90-240V MODBUS | 7,5 | 16 |
| PRISMA 1013 EP 90-240V MODBUS | 13 | 10 |
| PRISMA 0720 EP 90-240V MODBUS | 20 | 7 |
| PRISMA 0528 EP 90-240V MODBUS | 28 | 5 |
| PRISMA 0450 EP 90-240V MODBUS | 50 | 4 |
| PRISMA 0280 EP 90-240V MODBUS | 80 | 2 |

# TECHNICAL SCHEMATICS AND DIAGRAMS

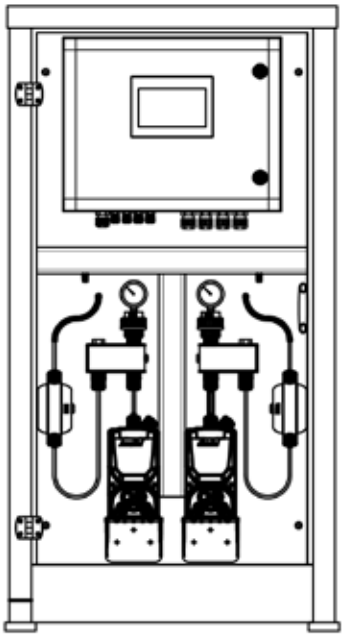


Fig. 1 - Instrumentation panel (front view)

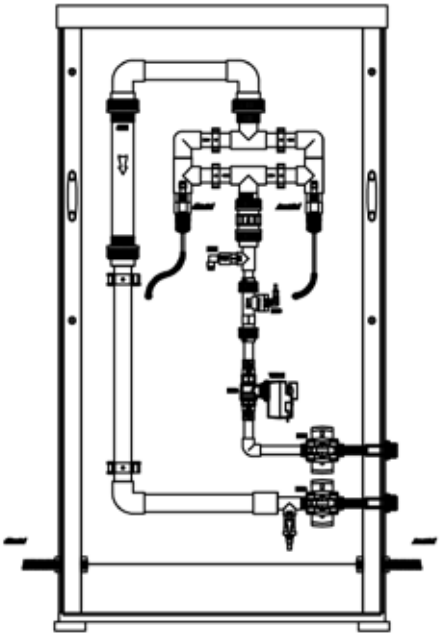


Fig. 2 - Instrumentation panel (rear view)

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