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CHEMICAL DOSING AND DISINFECTION

OXIPERM PRO

Integral disinfection solutions with chlorine dioxide (ClO_2)

Oxiperm Pro offers superior water desinfection technology for all types of water systems.

INTRODUCTION

Oxiperm Pro ensures effective disinfection of water in a series of application areas

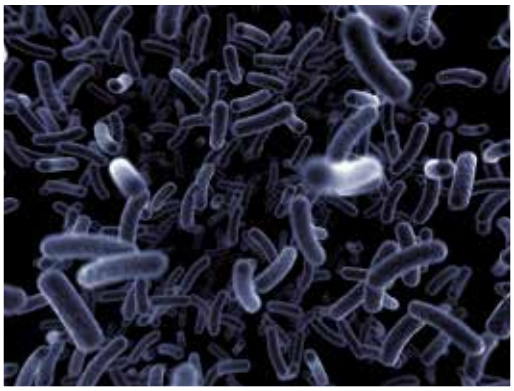
Water disinfection is of great importance in all buildings with drinking water consumption, and particularly in buildings that supply shower and bathing facilities. Water disinfection is also essential in applications where water mist is sprayed into the air, for instance cooling towers and evaporative condensers.

Oxiperm Pro ensures an efficient desinfection to:

- Hotels
- Hospitals
- Sports and swimming facilities
- Fitness centres
- Wellness resorts
- Residential buildings

LEGIONELLA CONTROL BEGINS HERE

THE PROBLEM



Legionel·la pneumophila, font principal de la malaltia del legionari

Naturally, the water we drink and shower in has to be clean if we are to stay healthy. Unfortunately, one of the most widespread health hazards in drinking water installations worldwide is connected to excepcionally resistant bacteria - legionella.

Legionella exist mainly in hot water systems with a low fow rate, areas of stagnation or badly serviced hot water tanks. A layer of slime in the water pipes called biofilm is the habitat for legionella and other microorganisms. The bacteria live, breed and thrive in biofilm in temperatures between 30 and 50°C and they constitute a severe health risk.

Drinking water regulations

Worldwide drinking water regulations require clean and healthy water free of:

- *Bacteria (legionella, salmonella, etc.)*
- *Viruses (hepatitis, polio, norovirus, etc.)*
- *Parasites (giardia, cryptosporidium, entamoeba, etc.)*
- *Fungus spores (yeast, moulds, etc.)*

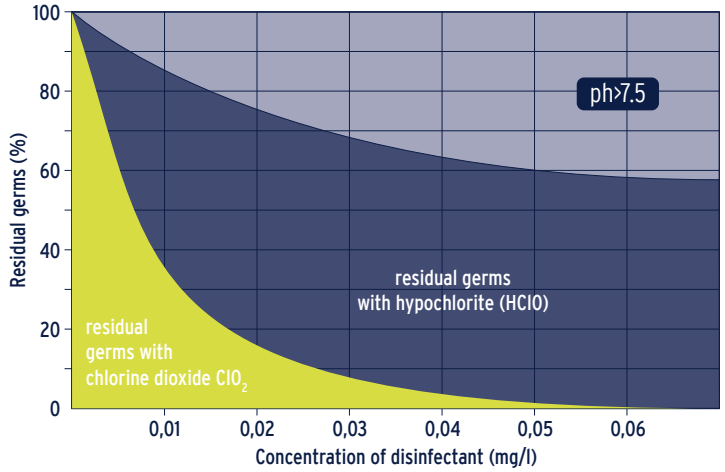
THE SOLUTION

Oxiperm Pro is the all round solution to the hazard of both legionella and other kinds of micro organisms. It offers the following unique benefits that remain unmatched by other disinfection methods:

- Works on both bacteria and biofilm
- Affects highly chlorine resistant germs
- Efficient in areas of the pipe systems with no flow (dead ends)
- No effect on the taste and smell of the water
- Sustained release effect for long-term desinfection

The right solution is both tough and gentle

There are many approaches to fighting legionella bacteria and bioflm, but no approach is as efficient or gentle as the Oxiperm Pro system. By choosing it, you have made the right choice.



Comparison of the disinfecting action of chlorine dioxide and hypochlorite at a ph>7.5.

Characteristics of typical disinfection solutions

	Removes biofilm	Effective against bacteria in biofilm	Effective against free bacteria	Affects water traste and smell	Sensitive to water-PH	Lyfe cycle cost	User scalding risk	Long-term effect
Thermal treatment	NO	LOW	MID	NO	NO	HIGH	YES	NO
UV radiation	NO	NO	HIGH	NO	NO	MID	NO	NO
Filtration	NO	NO	NO	NO	NO	MID	NO	NO
Chlorination (hypochlorite sol.)	NO	MID	HIGH	YES	YES	LOW	NO	MID
Ozone	NO	NO	HIGH	NO	NO	LOW	NO	NO
Chlorine dioxide	**YES**	**HIGH**	**HIGH**	**NO**	**NO**	**LOW**	**NO**	**HIGH**

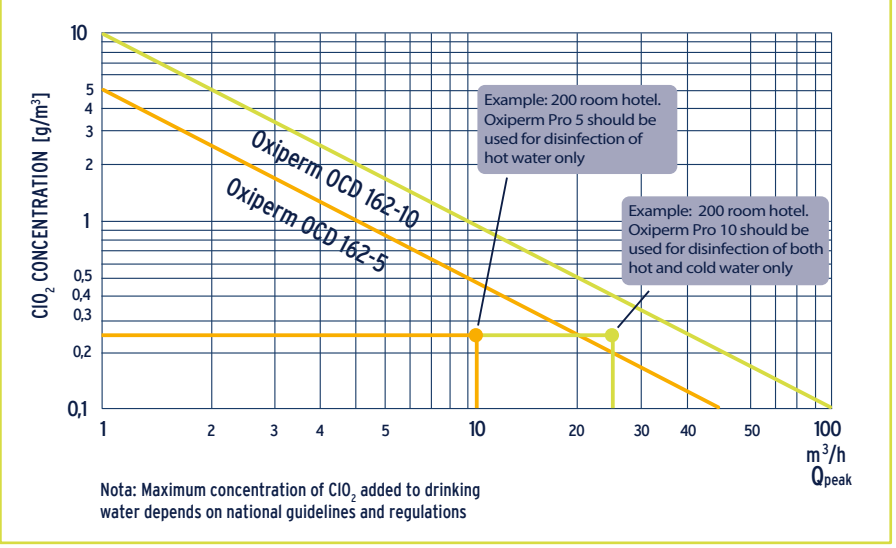
This chart illustrates how the typical solutions for disinfection perform on a number of parameters. The chlorine dioxide solution of the Oxiperm Pro system is superior to the rest.

SIZING

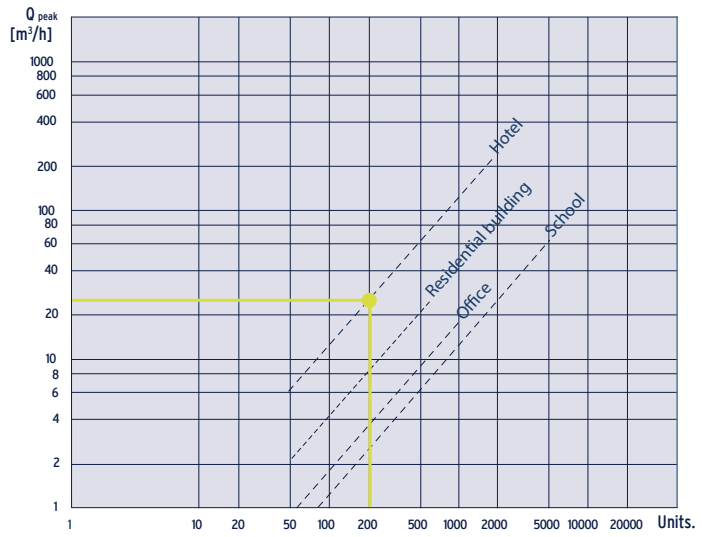
Concentration

Typical dosing rates in building applications are between 0.1 and 0.4 g/m^3.

Chlorine dioxide is effective at doses lower than other disinfectants .



Nota: Maximum concentration of ClO_2 added to drinking water depends on national guidelines and regulations



Flow

The required total consumption and maximum flow requirement depends on the building type.
There is a big difference in annual water consumption, daily maximum consumption and the peak consumption in a block of flats compared to a five star hotel. If you have no reliable flow measurements in the building, the table below gives you an example of how to calculate peak water flow in various types of buildings in order to select the right Oxiperm Pro.

Building type	Unit	Q_year [m³ per year]	Consumption period [days/year]	Q_avg [m³/unit/day]	f_d	Q_max [m³/unit/day]	f_p	Q_peak [m³/unit/h]
Residential building	Residents (2,5 pers.)	183	365	0,5	1,3	0,65	1,7	0,046
Office buildings	Employee	25	250	0,1	1,2	0,12	3,6	0,018
Shopping centre	Employee	25	300	0,08	1,2	0,1	4,3	0,018
Supermarket	Employee	80	300	0,27	1,5	0,4	3,0	0,050
Hotel	Bed	180	365	0,5	1,5	0,75	4,0	0,125
Hospital	Bed	300	365	0,8	1,2	1,0	3,0	0,120
School	Pupil	20	200	0,1	1,3	0,13	2,5	0,014

THE BENEFITS

The chemistry of great benefits

The Oxiperm Pro system uses chlorine dioxide for the disinfection of water. This particular chemical compound presents a number of advantages that cannot be matched by any other disinfection method.

Removes both free legionella and biofilm

Legionella bacteria grow and reproduce in biofilm as does 90% of all bacteria in water systems. Biofilm is a layer of slime that exists in water pipes and especially in hot water tanks. Chlorine dioxide diffuses into the biofilm and destroys it from within, whereas other disinfectants only attack the surface of the film.

Water pH adaptable

With chlorine dioxide, no particular pH value is needed, which makes it an extremely flexible disinfectant.

Long-term effect

Chlorinedioxide has the best residual effect of all the available disinfection methods. It stays in the water system for several days, reaches into every crack of the pipe fitting, and even dissolves into dead-end pipes with no water flow.

Digital dosing

The Oxiperm Pro is a digital dosing system which makes it flexible, cost effective and eliminates the risk of overdosing.

No effect on water taste and smell

Chlorine dioxide does not form the toxic chloramines and haloforms that are a by-product of chlorine-based disinfection methods. In efect, the water neither tastes nor smells of chlorine.

Low life cycle cost

Water disinfection with the Oxiperm Pro means reduced chemical use and reduced energy consumption. The chemical use is reduced due to the advanced batch-reaction-technology and the high-precision flow measurements that adjust the amount of chemicals to the current flow giving the Oxiperm Pro an extremely low overall life cycle cost.

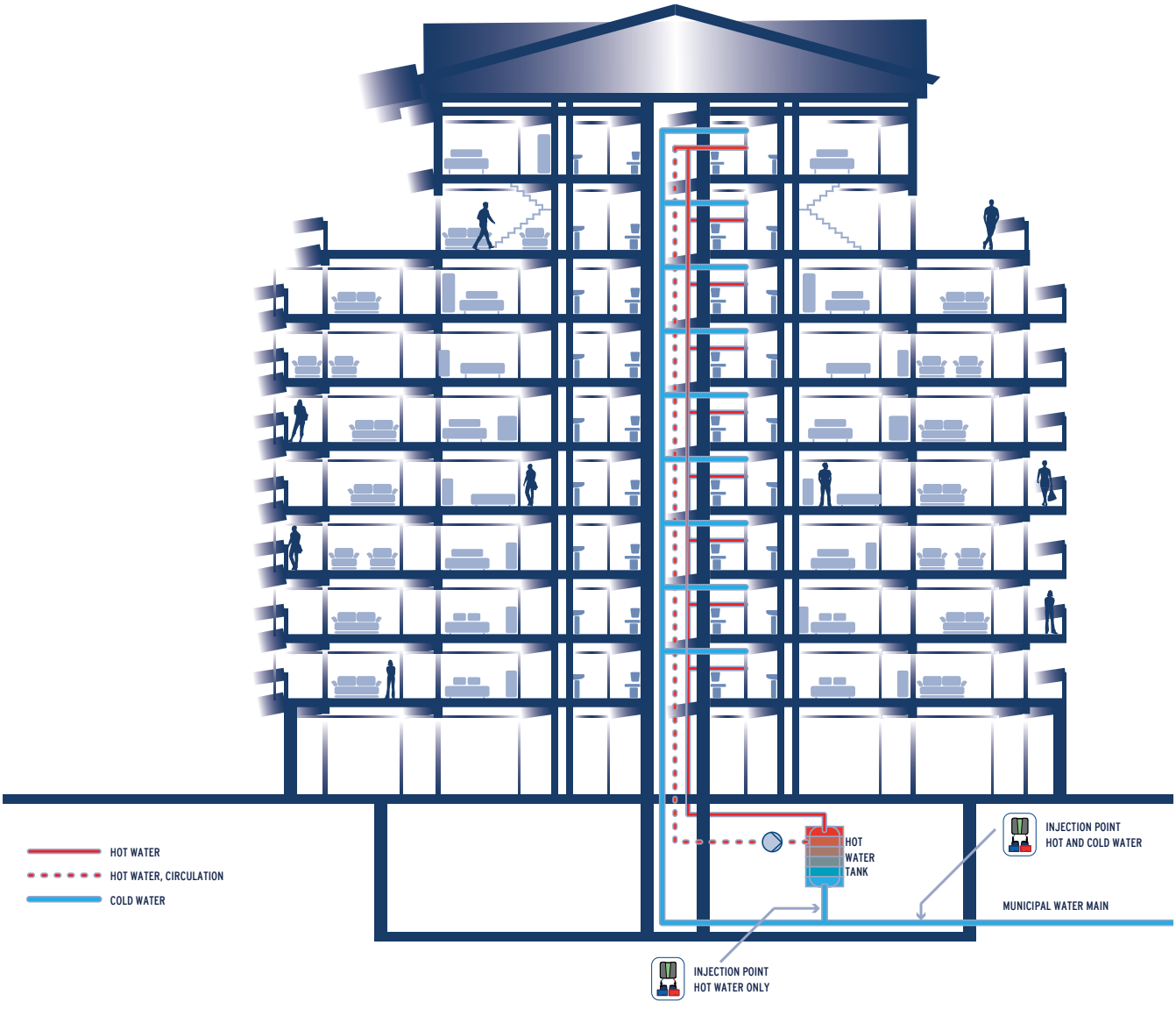
Compact design

The Oxiperm Pro has a built-in measuring application, which measures the residual chlorine in the water. It also has an integrated digital dosing pump making it an all-in-one compact solution.

INJECTION POINTS

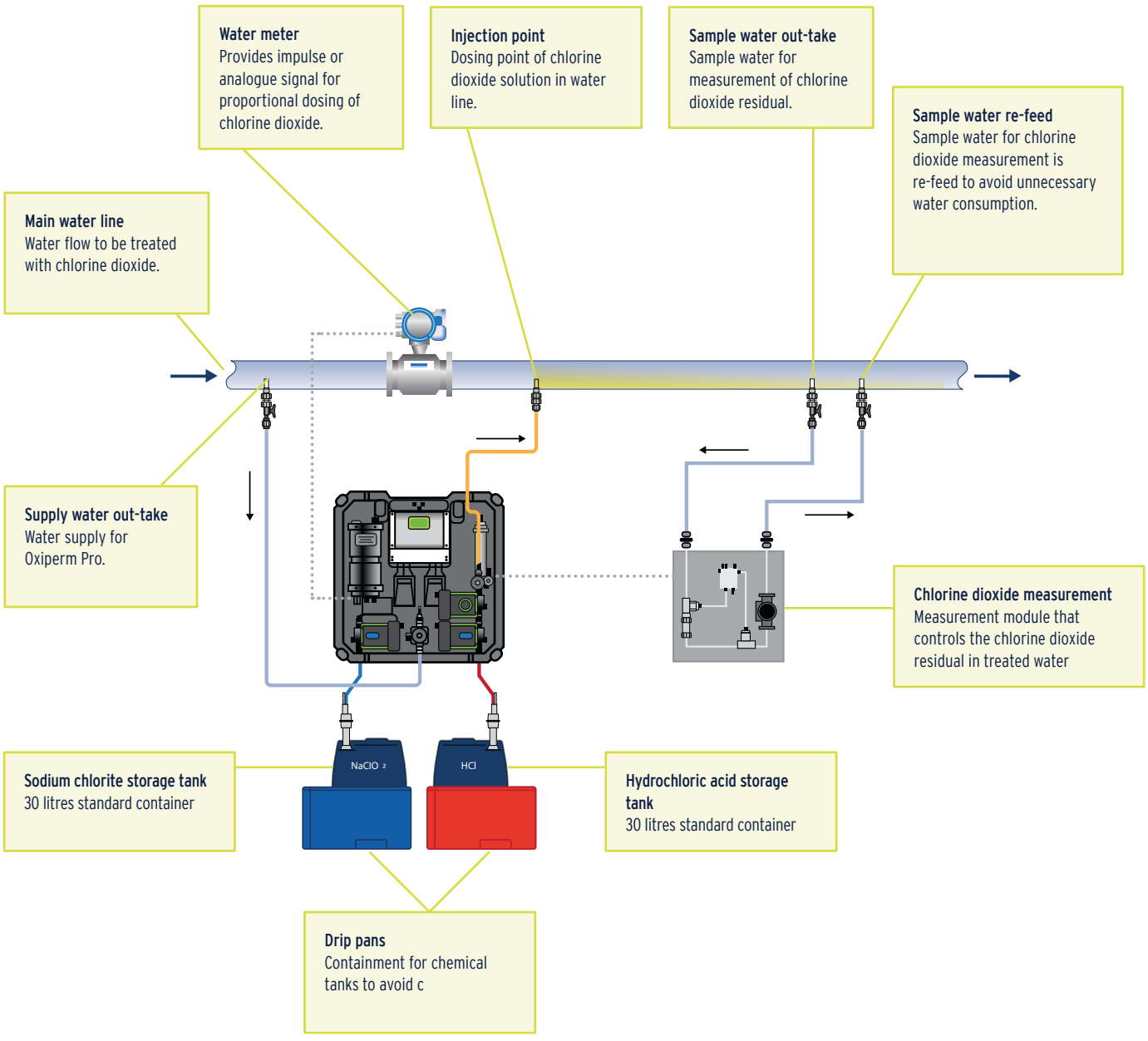
Injection of chlorine dioxide into the water system can be done wherever it is deemed suitable. If a total disinfection is desired, the injection point should be located where the water main enters the building.

In most cases, it is sufficient to treat only the hot water system where there is the highest risk of bacteria growth.



THE DETAILS

High operational reliability, low maintenance costs, easy operation and installation without interrupting the water supply installation.



Technical data

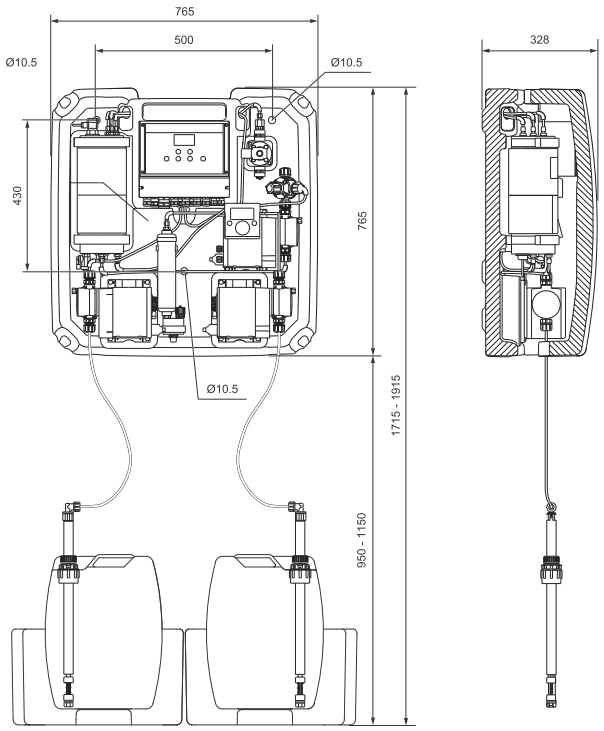
Chlorine dioxide generation capacity	OCD-162-10 OCD-162-60:	10 g/h 60 g/h
Adjustment of the preparation capacity	manual by menu-controlled operator prompting, automatic by input signal	
Protection level	IP 65	electronics, dosing pumps, solenoid valve
Required concentration of chemicals	HCl (to EN 939) $NaClO_2$ (to EN 938)	9% by weight 7,5% by weight
Admissible · ambient temperature · operation water temperature · chemicals temperature	5 - 35 ºC 10 - 30 ºC 10 - 35 ºC	
Admissible operation water pressure	3 a 6 bar	
Admissible relative air humidity	màx 80% a 35 ºC, sense condensació	
Concentration of the chlorine dioxide product solution	ca. 2 g/l (2000 ppm)	
Total volume of reaction and storage tank	Reaction tank OCD-162-10 1.80 liters OCD-162-60 13.40 liters	Storage tank (to maximum level alarm) OCD-162-10 1.80 liters OCD-162-60 13.00 liters
Filling volume of reaction and storage tank	Reaction tank OCD-162-10 1.67 litres OCD-162-60 11.96 litres	Storage tank OCD-162-10 1.67 litres OCD-162-60 13.00 litres
Material	system rack fastening sleeves solenoid valve reaction / storage tank internal hoses gaskets	PP stainless steel PVC PVC PTFE FPM
Full text menu control for	· commissioning · entering operating parameters · rinsing the system · maintenance	
Connections	dosing line ClO_2 dilution water	230 V hose 4/6 115V hose 1/8" x 1/4" 230V hose 6/9 or 6/12 o PVC pipe DN10 115V hose 1/4" x 3/8"

Electrical and electronic data

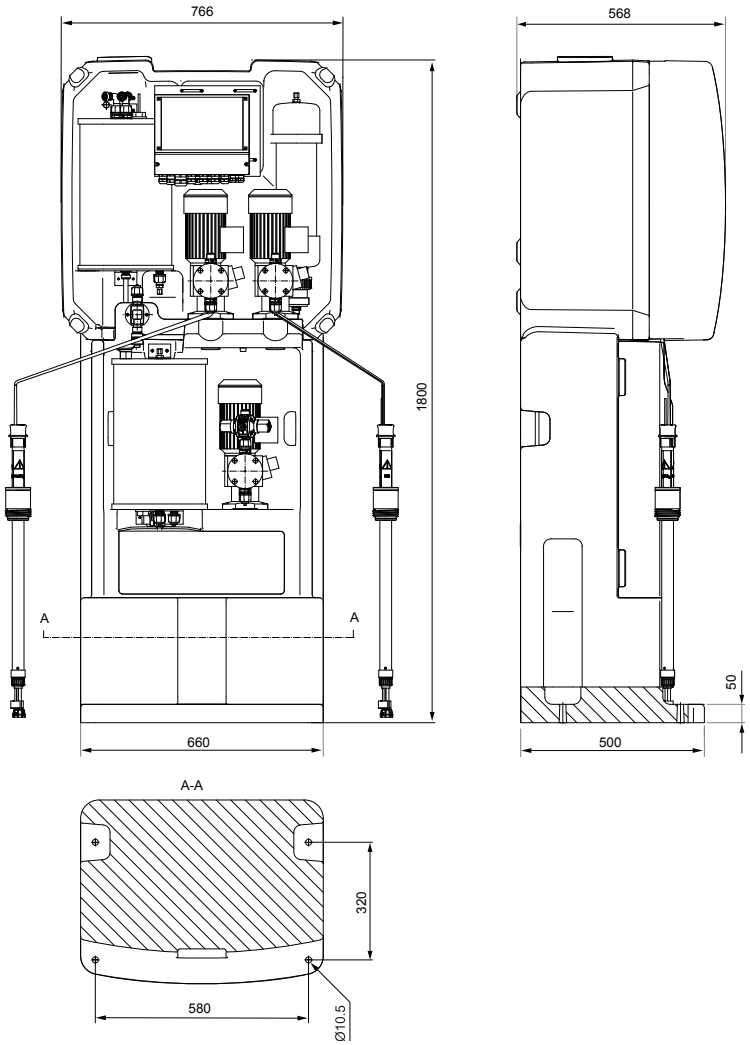
Mains connection	110/120 V / 50-60 Hz o 230/240 V / 50-60Hz
Power consumption	ca. 50 VA
Analogue input	· input 0(4) -20 mA (water meter) · measuring cell (ClO_2, pH or Redox, temperature) (option)
Digital input	· contact water meter (min. 3 pulses/min, max. 50 pulses/sec) · remote On/Off
Analogue output	· output 0(4) - 20 mA (pump regulation) · measured value ClO_2 0(4) - 20 mA
Potential-free output	· alarm relay, 250 V / 6 A, max. 550 VA (chemicals empty signal, dosing time monitoring, preparation process time monitoring, wire break current output) · warning relay, 250 V / 6 A, max. 550 VA (chemicals empty pre-alert, maintenance) · ClO_2 dosing pump

DIMENSIONS

OXIPERM PRO 162-10



OXIPERM PRO 162-60



OXIPERM PRO

Oxiperm Pro offers superior technology in water disinfection for all types of water systems. It has these unique features:

- It destroys the biofilm and free bacteria.
- It uses chlorine dioxide, extremely efficient, but no effect on the taste and smell of the water.
- The rugged desing ensures high operational reliability and low maintenance costs.
- Easy operation.
- Easy installation and put into operation with limited interruption of the water supply.

A més oferim:

- **Turnkey projects and commissioning of the installation**
- **Excellent after-sales service de recanvis and on-site repair.**

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