EMEC.
SIMPLE AS WATER

We are connected to water by a covenant of respect and pure gratitude. For over 35 years we have been designing and producing reliable, cutting-edge systems for water treatment and dosing of chemicals to make the human-water relationship more harmonious, safe and natural, drawing from a single source of inspiration.

The simplicity.

Flexibility, with three fundamental principles

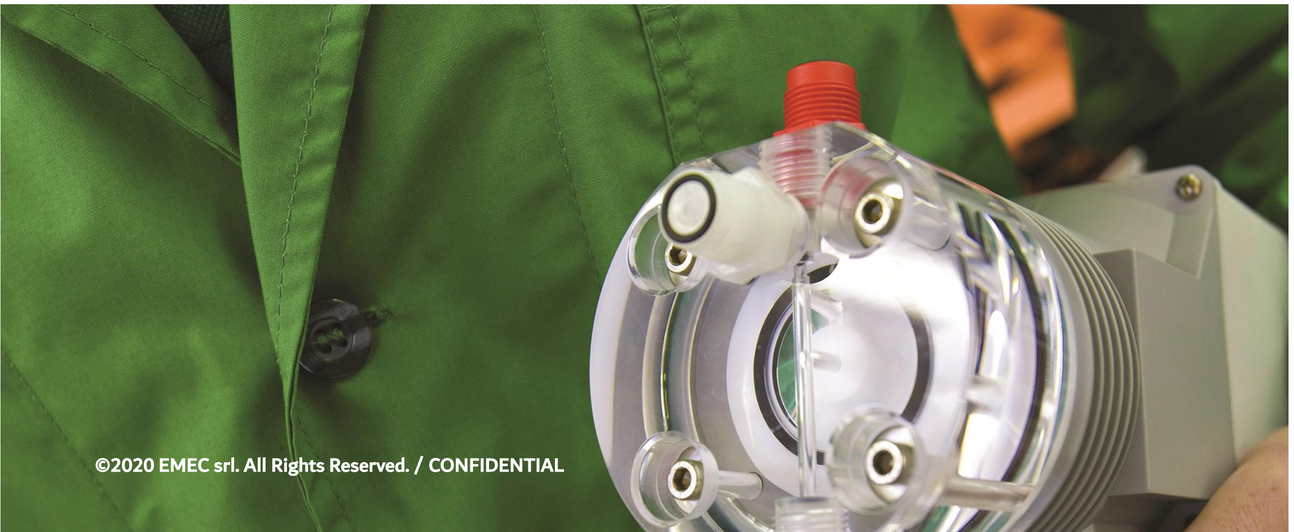
In a world that changes so fast, flexibility and innovation are fundamental to us. As a company, we are open to change, because we are rooted in three fundamental principles: constant research, extreme precision, healthy relationships.

The difference between consultant and supplier

Business Unit's in-depth knowledge of every step of the production process makes it possible for us to offer focused consulting, both for the choice and the customization of products.

A world of care and attention

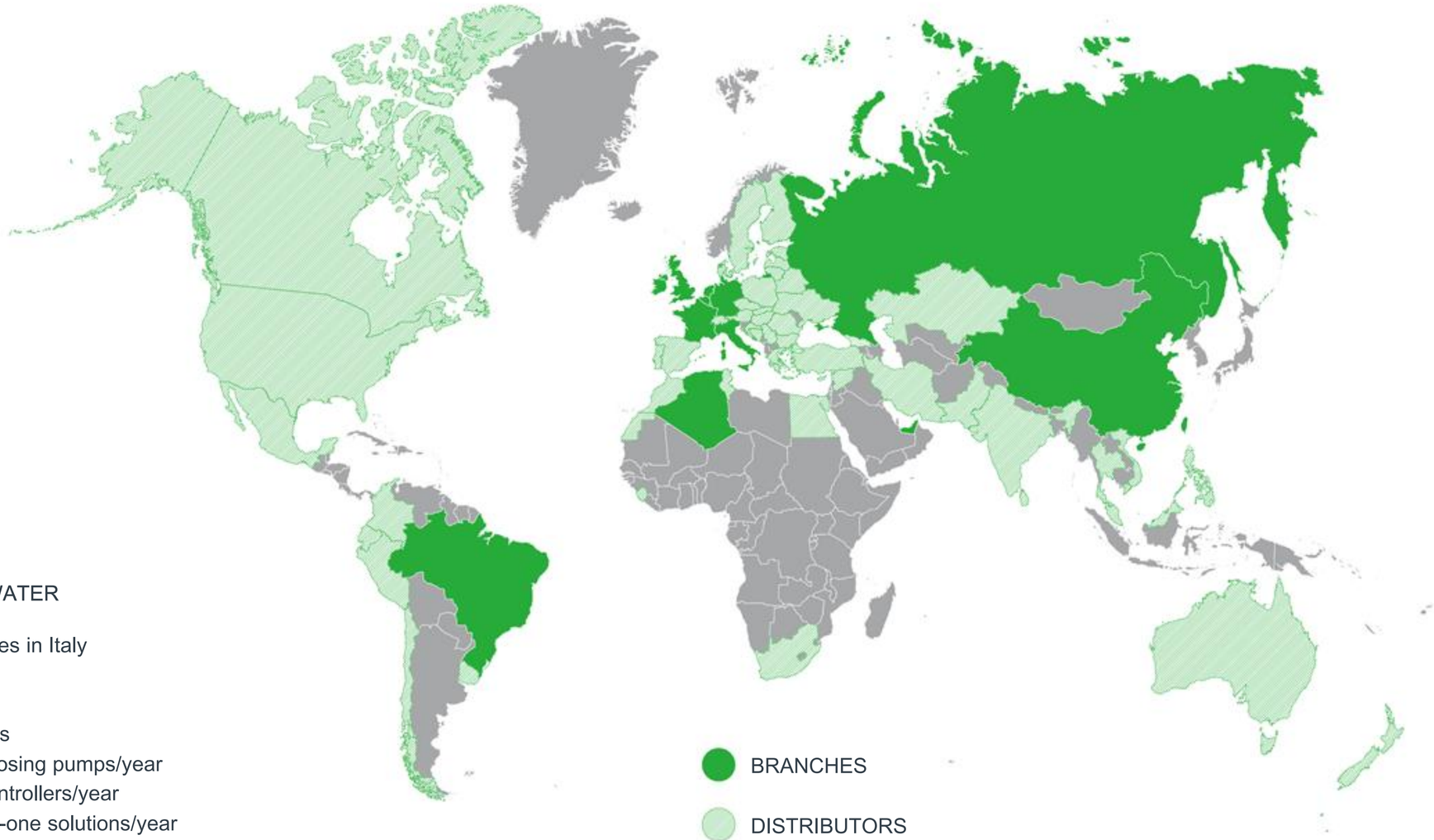
Water is the vital element on which our business is based and to respect this inestimable resource we treat the environment in the best possible way in order to also respect our ethics.



NOTHING IS SIMPLER THAN COMPLEXITY

We are an extremely prolific company, with high-level technical know-how. We manage articulate and complex processes with increasingly sophisticated standards of innovation. And all with the same objective: to make the lives of companies and professionals increasingly simple.

EMEC WORLDWIDE



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

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

OUR CERTIFICATIONS

EMEC
SIMPLE AS WATER

188 employees in Italy
54 countries
10 branches
24 distributors
150.000 dosing pumps/year
30.000 controllers/year
5.000 all-in-one solutions/year
100% of products tested

www.emecpumps.com

Chlorine Dioxide Generators

LOTUS SYSTEMS

The use of chlorine dioxide in the treatment of water has been driven by an increased awareness of biological related health issues. EMEC LOTUS chlorine dioxide generators can be used in a variety of industries for control of micro-organisms in water systems…

01

Reliable and Safe

LOTUS chlorine dioxide treated water systems are reliable and safe, being designed so there is no requirement to handle ClO_2 as a gas: two liquid chemicals, Hydrochloric Acid (HCl) and Sodium Chlorite ($NaClO_2$), react together to form the chlorine dioxide required, so there is no ClO_2 gas or concentrated solutions outside of the process application.

Disinfection techniques

INFERIOR
MEDIUM
SUPERIOR

DISINFECTION TECHNIQUES	Bio-film removal	Effectivness against bio-film bacteria	Effectivness against free bacteria	Sensitivty to water pH	Alteration of odour and taste of water	Working life cost	Burn risk	Long-term effectiveness
	MAIN FEATURES							
Thermic treatment	INFERIOR	INFERIOR	MEDIUM	SUPERIOR	SUPERIOR	INFERIOR	INFERIOR	INFERIOR
UV rays	INFERIOR	INFERIOR	SUPERIOR	SUPERIOR	SUPERIOR	MEDIUM	SUPERIOR	INFERIOR
Filtration	INFERIOR	INFERIOR	SUPERIOR	SUPERIOR	SUPERIOR	MEDIUM	SUPERIOR	INFERIOR
Chlorination (Sod. Hyp.)	INFERIOR	MEDIUM	SUPERIOR	INFERIOR	INFERIOR	SUPERIOR	SUPERIOR	MEDIUM
Ozone	INFERIOR	INFERIOR	SUPERIOR	SUPERIOR	SUPERIOR	SUPERIOR	SUPERIOR	INFERIOR
Chlorine dioxide	SUPERIOR	SUPERIOR	SUPERIOR	SUPERIOR	SUPERIOR	SUPERIOR	SUPERIOR	SUPERIOR

Benefits of ClO_{2v} disinfection

ELIMINATION OF FREE BACTERIA AND BIO-FILM

In water plants, 90% of bacteria are born and reproduce in the bio-film. Bio-film is the film of biological material that settles inside the tubing system and hot water tanks. Chlorine dioxide penetrates in the bio-film and destroys it from the inside.

WATER pH

The action of chlorine dioxide does not require a determined value of pH in the water- The independence from the pH makes it an effective and versatile product.

LONG-TERM EFFECT

Chlorine dioxide has a residual effect that remains for days and reaches all the points of the plant.

TASTLESS AND ODORLESS

Chlorine dioxide does not modify the taste and odour of the water.

NO CHLORAMMINES

Chlorine dioxide does not create toxic chlorammines and haloforms, unlike other chlorine-based disinfectants.

MODELS	*ClO_2 MAX CAPACITY*
AIR 10	10 g/h
AIR 30	30 g/h
AIR 60	60 g/h
MINI 8	8 g/h
MINI 20	20 g/h
EASY 8	8 g/h
EASY 20	20 g/h
EASY 40	40 g/h
EASY 80	80 g/h

MODELS	*ClO_2 MAX CAPACITY*
MAXI 80	80 g/h
MAXI 160	160 g/h
MAXI 240	240 g/h
MAXI 400	400 g/h
MAXI 600	600 g/h
MAXI 800	800 g/h
MAXI 1000	1000 g/h
ULTRA 1000	1000 g/h
ULTRA 2000	2000 g/h
ULTRA 3000	3000 g/h
ULTRA 4000	4000 g/h

AVAILABLE CONFIGURATIONS

MODBUS

ETHERNET

WIFI

3G/4G

USB PORT

GENERAL FEATURES

ONLINE STATS

CUSTOMIZABLE

ERMES READY

LOTUS

Our Chlorine Dioxide Generator solutions

The use of chlorine dioxide in the treatment of water has been driven by an increased awareness of biological related health issues. EMEC LOTUS chlorine dioxide generators can be used in a variety of industries for control of micro-organisms in water systems and are especially recommended for Legionella removal and prevention in cold and hot water systems.
LOTUS chlorine dioxide treated water systems are reliable and safe, being designed so there is no requirement to handle ClO_2 as a gas: two liquid chemicals, Hydrochloric Acid (HCl) and Sodium Chlorite ($NaClO_2$), react together to form the chlorine dioxide required, so there is no ClO_2 gas or concentrated solutions outside of the process application.
Thanks to EMEC online control system ERMES, you will also be able to monitor and interact with LOTUS systems from everywhere and through a simple but powerful web interface.

02

Applications

The use of chlorine dioxide is advantageous because effective at much lower quantities compared to other compounds and at any pH, as well as resulting.

Applications

Oxidizing and disinfectant action

The use of chlorine dioxide is advantageous because effective at much lower quantities compared to other compounds and at any pH.

Its oxidizing and disinfectant action, does not produce toxic residues and in addition to effectively eliminating a broad spectrum of bacteria and viruses it also affects the biofilm, thus preventing the reformation of new bacterial colonies and possible blockages within the water system.

- Four times more effective than chlorine
- Yield greater than 95%
- It does not form byproducts and chlorine-compounds
- It is the only biocide capable of breaking the biofilm
- It is not dependent on pH
- It is odorless and tasteless
- It is economically more efficient than chlorine
- Less use of chemicals

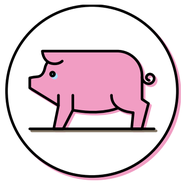
POULTRY

- Improved gut health;
- Drier litter;
- Lower mortality rate;
- Improvement in FCR (Feed Conversion Ratio);
- Reduction in breast burning;
- Increase in average bird weight;

AGRICULTURE

- Reduction in blocked drippers and overhead sprinklers, allowing free flowing clean water;
- Removes and prevents algae from water systems;
- Reduction in root bourne diseases;
- Biofilm free irrigation lines;
- Helps to reduce / eliminate phytophthora & pythium from the river to end of line;
- Improved filtration and water pressure through the site;
- Leaves no harmful by-products;
- Non-corrosive to all equipment, pipe work and filters;
- Kills all water born bacteria.

LIVESTOCK FARMING



- Indicated for pig farming;
- Improvement in FCR (Feed Conversion Ratio);
- Lower mortality rate;
- Drier litter;
- Improved gut health;
- Reduction in scour;
- Reduction in days to slaughter;
- Non-corrosive to all pipe work and filters;
- Improvement in batch evenness.

FOOD PROCESSING

- Safe for use on organic produce;
- Reduces / eliminates bio-film;
- Leaves no harmful by-products or residues;
- No need for final rinse;
- Prolongs product shelf-life;
- Treats cross contamination & recycled water;
- Influent and effluent water;
- Does not create odours.

APPLICATIONS

DRINKING WATER

- Good quality clean water distributed to local towns and households;
- Eliminates and prevents reoccurence of all bio-film;
- Does not create odour;
- Kills all water born bacteria from the source of water.

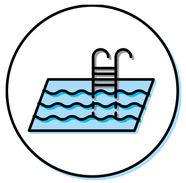
OIL & GAS INDUSTRY

- Extremely powerful oxidizer and bactericide;
- It works in water as a soluble compound;
- Works across pH, turbidity and temperatures;
- Does not react with carbon-based compounds like oil or gas.

GREY WATER RECYCLING

- Less mains water consumption;
- Significantly reduced water costs;
- Reduced environmental impact;
- Daily supply per person roughly equates to demand;
- Storage capacity needed will be less saving both space and cost.

SWIMMING POOL



- Suitable for disinfection of both sanitary and swimming pool water;
- Can also be used in combination with chlorine;
- Effective at low concentrations;
- Reduces the need to use other substances;
- There is no formation of dangerous by-products in contact with organic material.

COOLING TOWERS / HOTELS / SPA

- Effective over a broad pH range;
- Controls bacteria, fungi, viruses, biofilm, protozoa and algae;
- Does not react with ammonia and does not produce toxic compounds in contact with organic materials present in water;
- Effective at considerably lower dose rates than chlorine or bromine;
- Degrades to harmless inorganic chemicals.

HOSPITAL

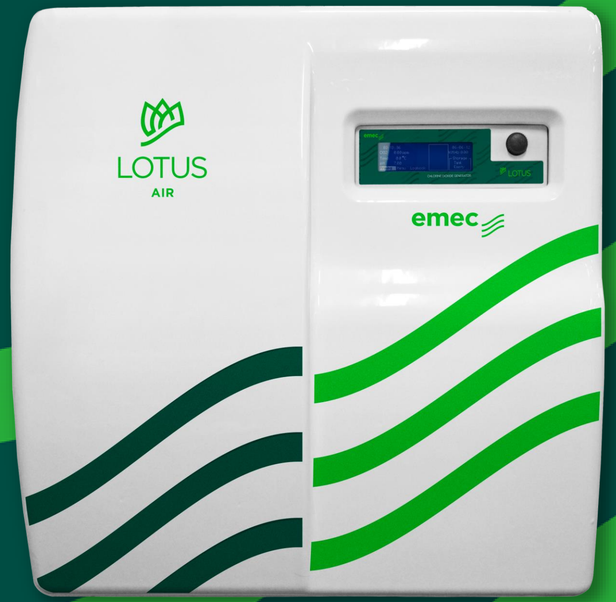
- Helps to sterilize medical and laboratory equipment, surfaces, rooms and tools;
- Is safe and effective at eliminating Legionella bacteria in hospital environments.

03

Lotus Systems

- Lotus Air
- Lotus Mini
- Lotus Maxi
- Lotus Ultra
- Lotus Easy

Lotus AIR

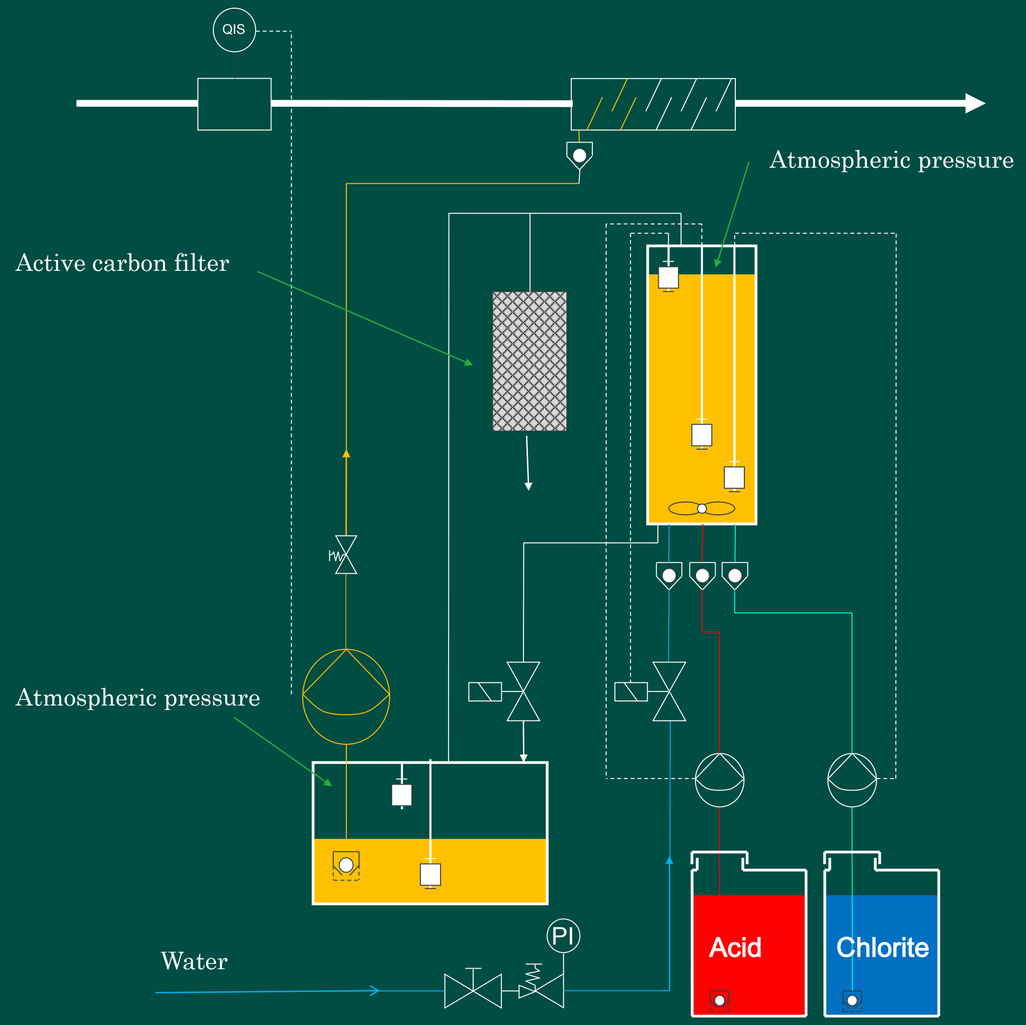


30/60 gr/h

10 gr/h

With probe

Production at atmospheric pressure



LOTUS AIR generator can serve multiple plants

MULTIPLE INJECTION

LOTUS AIR can achieve the treatment of multiple plants (5) at the same time, with *alarm* notice at *product exhaustion* and *pump blockage* in automatic integrating in the system the measurement of ClO2 in the water.

EFFICIENCY

LOTUS AIR has a reduced cost of operational life. Disinfection with LOTUS AIR limits the consumption of chemical substances and reduces the energy consumption.

Its technology at *discontinuous reaction* and its precision in the measurement of dosing can balance the exact quantity of chemicals that need to be dosed in the plant.

PROPORTIONAL DOSING

LOTUS AIR has a digital system for the *proportional* dosing of the product. The generator can work with a *pulse emitter watermeter* and a measurement *probe for ClO2* – or both. This eliminates the risk of overdosing the dioxide. In case LOTUS works with a watermeter only, it has an *up-keep dosing* function.

ERMES REMOTE MANAGEMENT

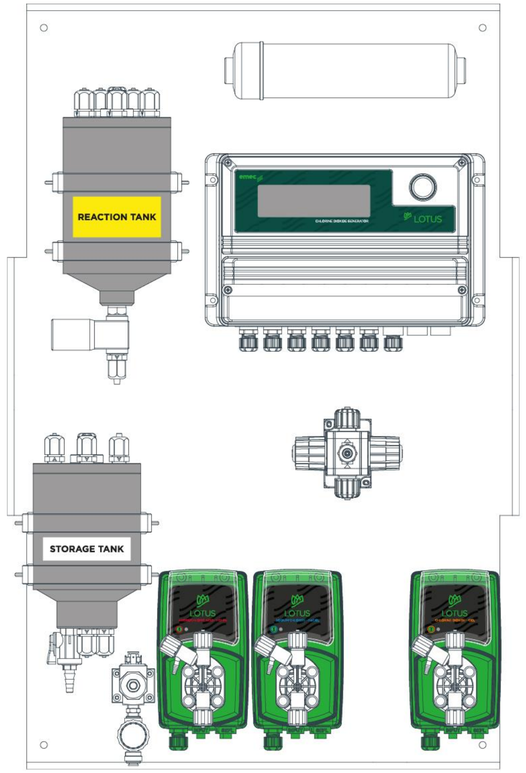
LOTUS AIR can be integrated in EMEC's remote management system *ERMES* through a *Modem*, *Ethernet* or *Wifi* connections. It can also communicate with *Modbus* protocol.

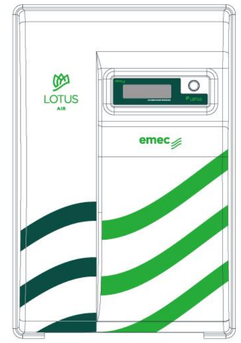
Lotus Air

LOTUS AIR is a pressure-less chlorine dioxide generator useful for those applications in which several injection points are required. Chlorine Dioxide is produced from diluted base chemicals: acid-chlorite process by Hydrochloric Acid (HCl 9%) and Sodium Chlorite ($NaClO_2$ 7,5%).

Chlorine dioxide produced by LOTUS AIR is stocked into a tank and then dosed proportionally to the request. It can also be controlled remotely via the web application ERMES through a 2G/3G modem or a LAN adapter, while Modbus is available as option.

Its elegant cover preserves the cleanliness of the inner components and their integrity.




AIR 10


AIR 10


AIR 30/60


AIR 30/60

RANGE: 10-60 g/h

MAX CAPACITY: 1440 g/day

GAS SENSOR OPTION
LOTUS AIR with gas sensor detection.

MODELS	*ClO_2 MAX CAPACITY*	*MAX CHEMICALS COMSUMPTION*	*CHEMICALS CONCENTRATION*	*CHEMICAL REACTOR*	*MAX PRESSURE (FEEL WATER)*	*WORK MAX PRESSURE*
AIR 10	10 g/h	0,25 l/h	9% HCl 7,5% $NaClO_2$	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

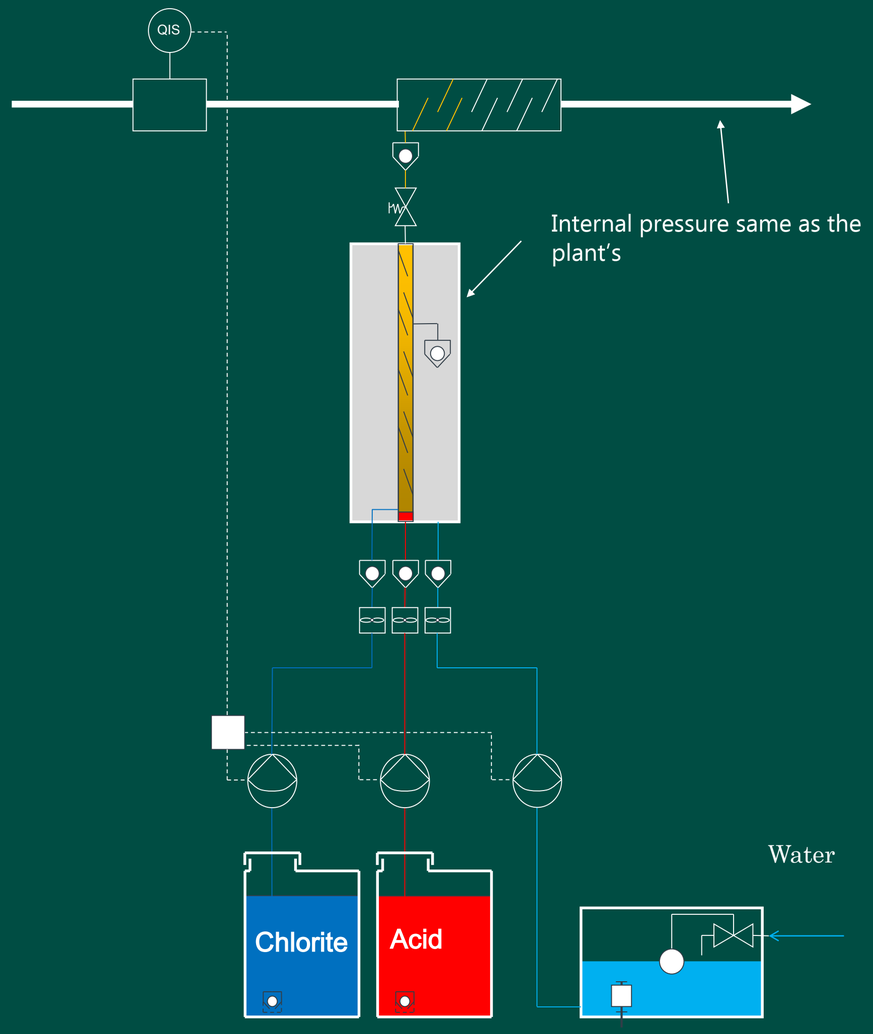
LOTUS
under pressure

MINI

MAXI

ULTRA

Production under pressure



LOTUS generator can dose large quantities at high concentrations in pressurized systems

AMPLE RANGE OF PRODUCTION

LOTUS can produce between *8 and 4.000 gr/h* of ClO2, managing products at high concentrations (*33% HCL 25% NaClO*) thanks to the reactor in PVDF.

EFFICIENCY

Under pressure the reaction has a longer life and with the closed circuit you reduce the risk of gas leaks. LOTUS generators that manage larger volumes (MAXI and ULTRA) are supplied with a safety chamber to manage any leaks of products reducing the risks.

PROPORTIONAL DOSING

LOTUS has a digital system for the *proportional* dosing of the product. The generator can work with a *pulse emitter watermeter* and a measurement *probe for ClO2* – or both. This eliminates the risk of overdosing the dioxide. In case LOTUS works with a watermeter only, it has an *up-keep dosing* function.

ERMES

REMOTE MANAGEMENT

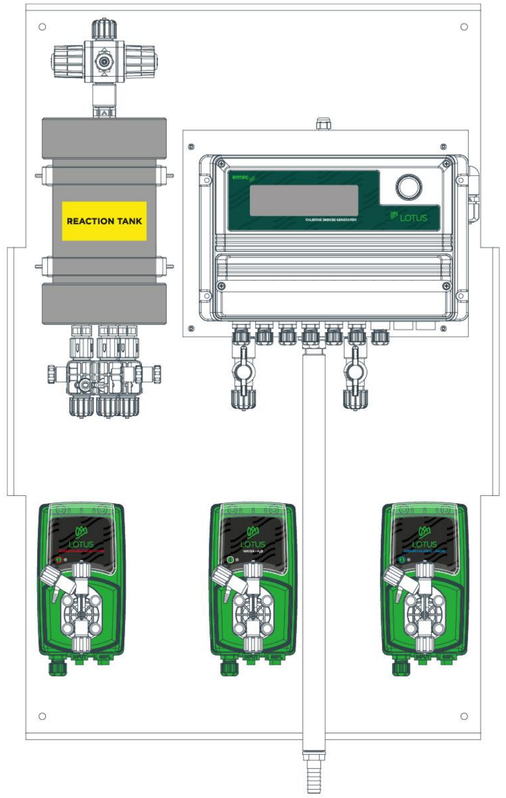
LOTUS can be integrated in EMEC's remote management system *ERMES* through a *Modem*, *Ethernet* or *Wifi* connections. It can also communicate with *Modbus* protocol.

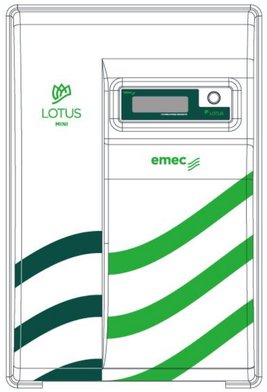
Lotus Mini

LOTUS MINI is an all-round solution for all your need for water disinfection. It is safe and solid and can also be controlled remotely via the web application ERMES through a 2G/3G modem or a lan adapter, while Modbus is available as option.

Its elegant cover preserves the cleanliness of the inner components and their integrity. Chlorine dioxide produced by LOTUS MINI can be proportional to the circulating water flow or based on a measured setpoint.

Since chlorine dioxide goes through a closed circuit there is no gas or concentrated solutions outside of the process application.





MINI 8/20

MINI 8/20

RANGE: 8-20 g/h

MAX CAPACITY: 480 g/day

GAS SENSOR OPTION
LOTUS MINI with gas sensor detection.

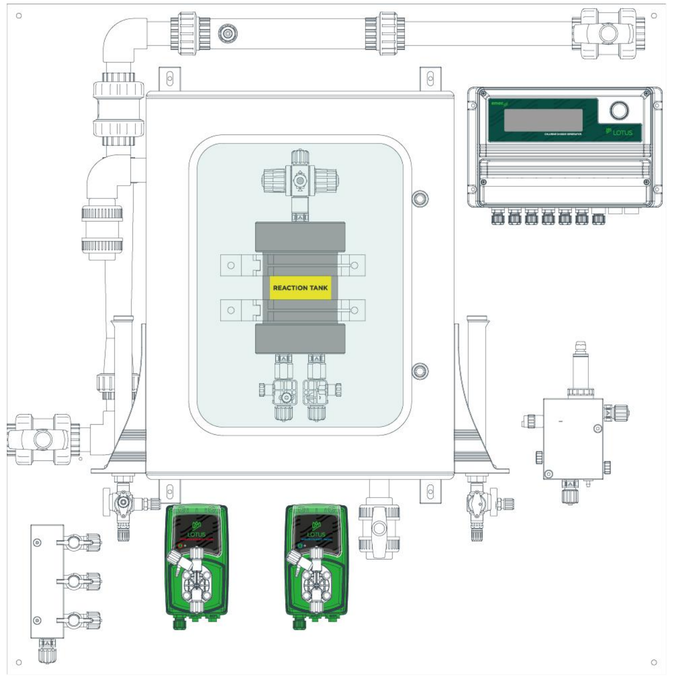
MODELS	*ClO_2 MAX CAPACITY*	*MAX CHEMICALS COMSUMPTION*	*CHEMICALS CONCENTRATION*	*CHEMICAL REACTOR*	*MAX PRESSURE (FEEL WATER)*	*WORK MAX PRESSURE*
MINI 8	8 g/h	0,2 l/h	9% HCl 7,5% $NaClO_2$	PVC	5 bar	8 bar
MINI 20	20 g/h	0,5 l/h			5 bar	8 bar

Lotus Maxi

LOTUS MAXI is one of the largest product among EMEC Chlorine Dioxide generators and is used in all those cases in which there is need of a big production, such as large water treatment plants.

Chlorine dioxide produced by LOTUS MAXI is set to be proportional to the circulating water flow or based on a setpoint, it is then dosed into the water flow.

It can also be controlled remotely via the web application ERMES through a 2G/3G modem or a lan adapter, while Modbus is available as option.



MODELS	*ClO_2 MAX CAPACITY*	*MAX CHEMICALS COMSUMPTION*	*CHEMICALS CONCENTRATION*	*CHEMICAL REACTOR*	*WORK MAX PRESSURE*
MAXI 80	80 g/h	2 l/h	9% HCl 7,5% $NaClO_2$	PVC	8 bar
MAXI 160	160 g/h	4 l/h			8 bar
MAXI 240	240 g/h	6 l/h			8 bar
MAXI 400	400 g/h	10 l/h			8 bar
MAXI 600	600 g/h	15 l/h			8 bar
MAXI 800	800 g/h	20 l/h			5 bar
MAXI 1000	1000 g/h	25 l/h			3 bar

RANGE: 80-1000 g/h

MAX CAPACITY: 24000 g/day

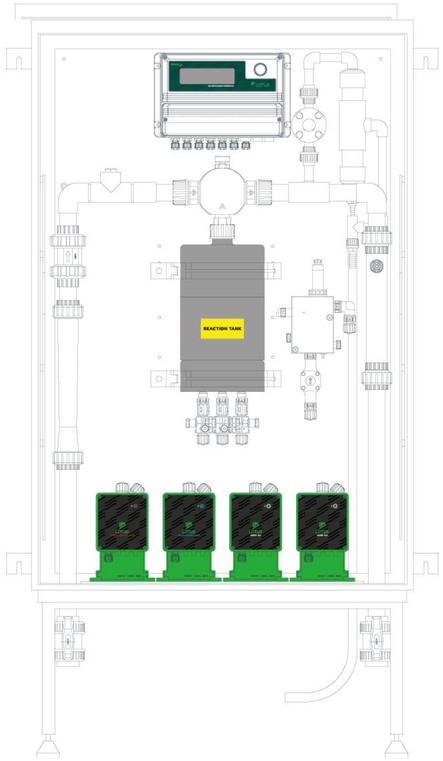
GAS SENSOR OPTION
LOTUS MAXI with gas sensor detection.

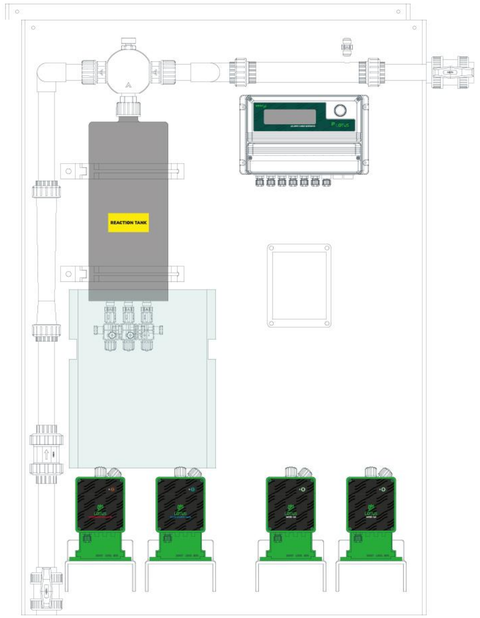
Lotus Ultra

LOTUS ULTRA is the largest product among EMEC Chlorine Dioxide generators and is used in all those cases in which there is need of a big production, such as large water treatment plants.

Chlorine Dioxide is produced from concentrated base chemicals: acid-chlorite process by Hydrochloric Acid (HCl 33%) and Sodium Chlorite (NaClO2 25%). Reactor and parts in contact with concentrated ClO2 are in PVDF.

Chlorine dioxide produced by LOTUS ULTRA is set to be proportional to the circulating water flow or based on a setpoint, it is then dosed into the water flow.





RANGE: 1000-4000 g/h

MAX CAPACITY: 96000 g/day

GAS SENSOR OPTION
LOTUS ULTRA with gas sensor detection.

MODELS	*ClO_2 MAX CAPACITY*	*MAX CHEMICALS COMSUMPTION*	*CHEMICALS CONCENTRATION*	*CHEMICAL REACTOR*	*WORK MAX PRESSURE*
ULTRA 1000	1000 g/h	6,1 l/h	33% HCl 25% $NaClO_2$	PVDF	5 bar
ULTRA 2000	2000 g/h	12,2 l/h			5 bar
ULTRA 3000	3000 g/h	18,3 l/h			3 bar
ULTRA 4000	4000 g/h	24,4 l/h			2 bar

Lotus EASY

Lotus Easy

LOTUS EASY is the best solution if you want a simple but professional way to produce chlorine dioxide, thanks to an integrated All-in-One Controller equipped with two metering pumps.

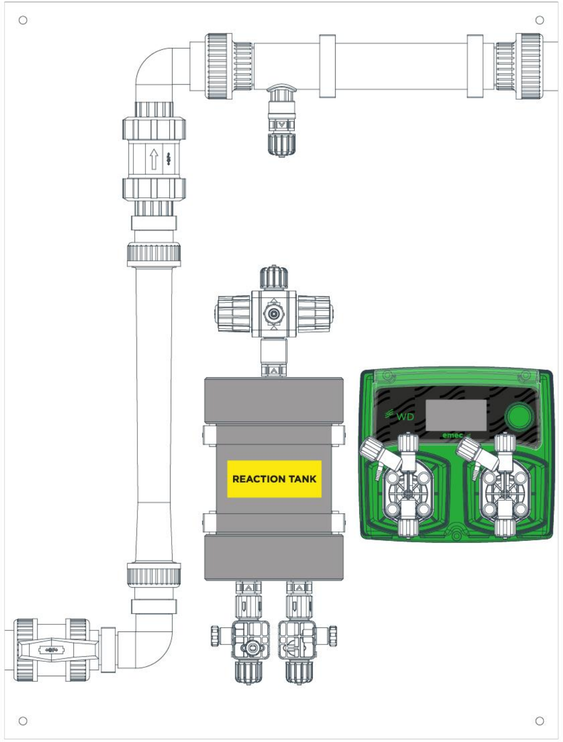
Chlorine dioxide produced by LOTUS EASY can be proportional to the circulating water flow.

There is no storage of chlorine dioxide therefore there is no chlorine dioxide gas or concentrated solutions outside of the process application.

LOTUS EASY is designed so that the reaction to produce chlorine dioxide takes place in a reaction chamber. Multi function valves on injection points ensure security of the reaction chamber.

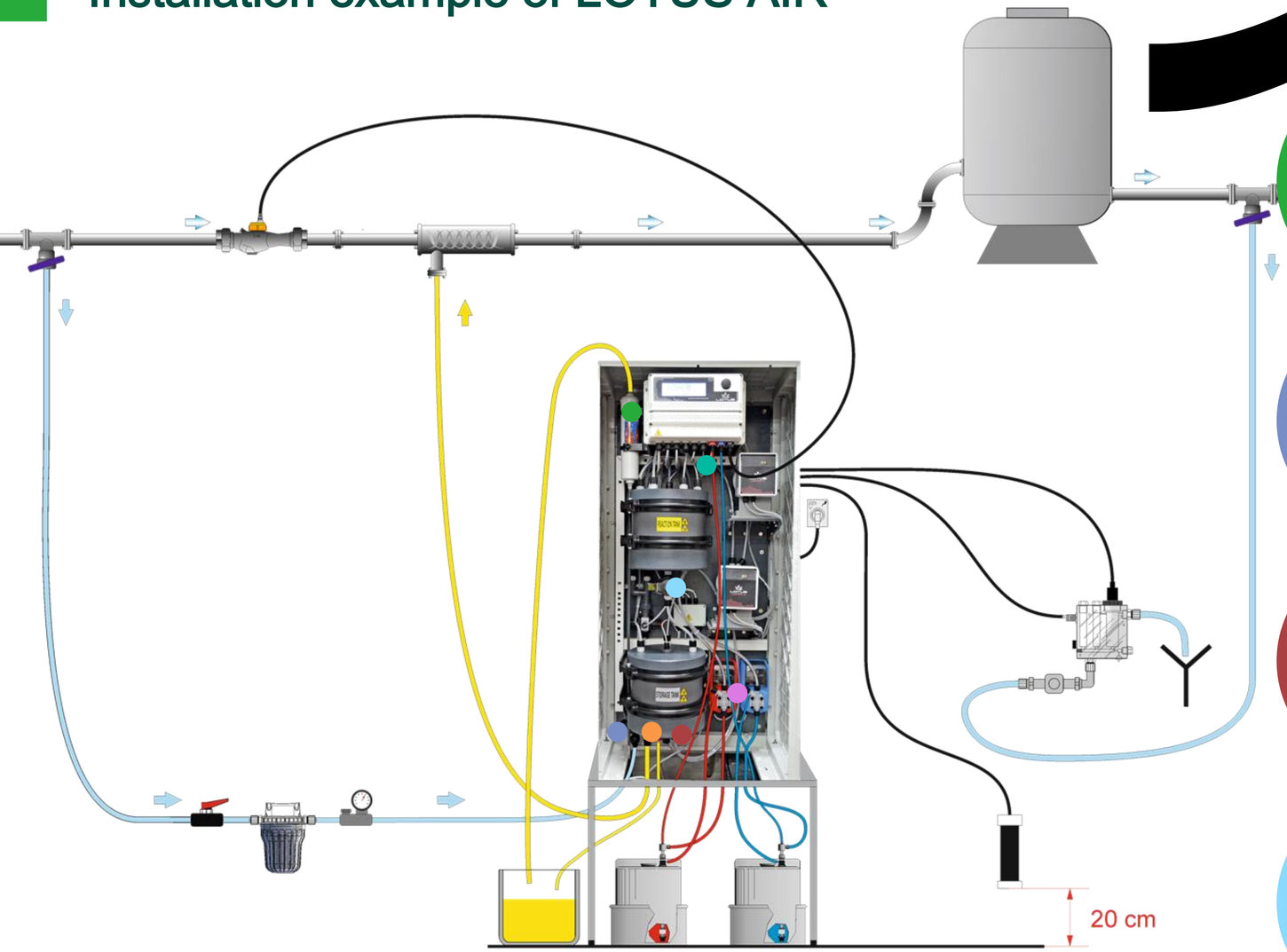
RANGE: 8-80 g/h

MAX CAPACITY: 1920 g/day



MODELS	*ClO_2 MAX CAPACITY*	*MAX CHEMICALS COMSUMPTION*	*CHEMICALS CONCENTRATION*	*CHEMICAL REACTOR*	*WORK MAX PRESSURE*
EASY 8	8 g/h	0,2 l/h	9% HCl 7,5% $NaClO_2$	PVC	8 bar
EASY 20	20 g/h	0,5 l/h			8 bar
EASY 40	40 g/h	1 l/h			8 bar
EASY 80	80 g/h	2 l/h			8 bar

Installation example of LOTUS AIR



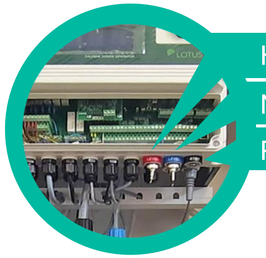
4x6 PE tubing

220 VAC

Water inlet

6x8 PE tubing

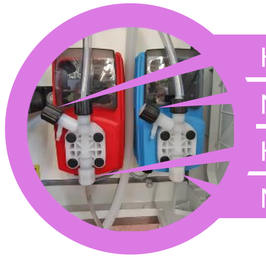
6x8 PVDF tubing



HCL level (Acid)

NaClO2 level (Chlorite)

Pulse emitter watermeter



Hclm venting

NaClO2 venting

Hcl suction

NaClO2 suction

Dioxide venting

16x22 PVC venting

04

Applications

- Mineral water bottling
- Food industry
- Hotels and Hospitals
- Swimming pools

Mineral water bottling

Chlorine dioxide is used in many mineral water bottling plants, thanks to the strong disinfectant action of the ClO_2 and the absence smell and taste of chlorine in the water.

Photo: Nocera Umbra imbottigliamento acque / La Galvanina Rimini imbottigliamento.

Food industry

The use of chlorine dioxide in food industries is safer because it leaves no harmful by-products or residues and prolongs product shelf-life.
ClO_2 is also safe for use on organic produce.

In the photographs: a brewery, a pork processing plant and a mussels washing plant.

Photo: Copema Ancona lavaggio molluschi / Saragoza allevamento maiali (Spagna) / Varese Carlsberg imbottigliamento birra

Hotels & hospitals

The use of Chlorine Dioxide in hotels and hospitals water heating systems is safe and effective even at low concentration, because its action is destructive towards the biofilm, the natural habitat of the Legionella bacterium, but not corrosive towards the pipes.

Photo: Hotel Nizza, Roma / Crevalcore's rest home, Bologna

Swimming Pools

At present, in Italy the law does not include chlorine dioxide in the chemicals that can be used for swimming pools.

However, EMEC is carrying out tests on a public swimming pool in Italy, dosing chlorine dioxide and hypochlorite, to demonstrate the positive effects of chlorine dioxide in the elimination of chlorine by-products, in the elimination of combined chlorine and at a later stage to keep the pool water completely disinfected.

EMEC srl

Thanks for your availability and attention

We are available to answer Your questions.