gaffey

WATER TREATMENT FOR LIFE

chloriDOS iOX®

UNCOMPROMISING WATER DISINFECTION SYSTEMS

gaffey

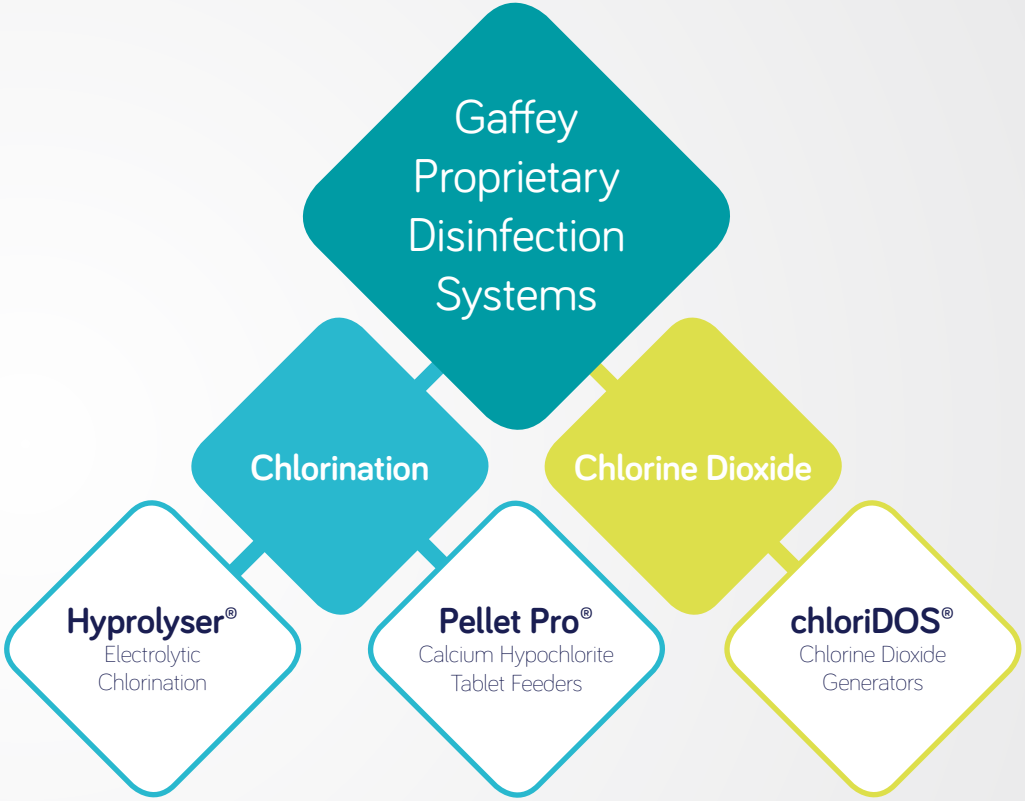
WATER TREATMENT FOR LIFE

Water Treatment You Can Trust

At Gaffey, we pride ourselves on producing products that challenge convention and defy expectation. Our story is one of change, innovation and development.

We know the importance of creating safe environments and use our 30+ years industry experience to focus on solving the problems of waterborne bacteria.

Through innovative design and smarter engineering, we manufacture unique, functional and future-proof technologies with the safety of the end user in mind.



Chlorine Dioxide

Safe and efficient generation and distribution of Chlorine Dioxide solutions

Introducing iOX

The next generation of on-site water disinfection solutions. Providing incredible safety, efficiency and accuracy in the control of bacteria, Biofilm and Legionella.

Our latest evolution in on-site Chlorine Dioxide systems really is unique. By incorporating our patent pending, volumetric batch generation technology, it is not only the most accurate on the market, but also provides unmatched data reporting, that is easily accessible.

Compact and durable in construction, iOX provides peace of mind in demanding environments. It's cost effective in terms of scalability and whole life costs whilst enabling maintenance efficiencies that offer real end user benefits.

chloriDOS iOX®

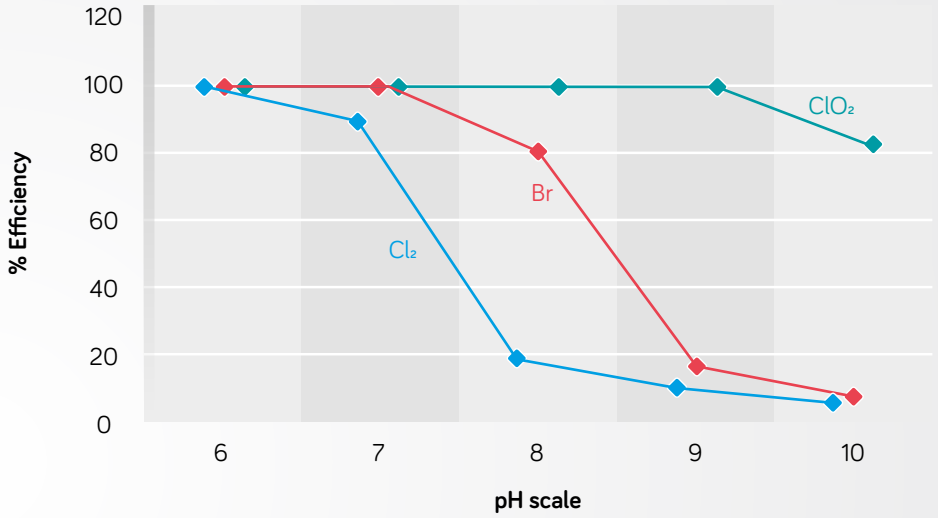
Why use Chlorine Dioxide?

Chlorine Dioxide (ClO_2) has some unique properties which are particularly useful in the disinfection of water systems and set it apart from other disinfection methods.

ClO_2 is approximately 10 times more soluble in water than Chlorine and does not hydrolyse; making it more efficient as it remains as a gas dissolved in a solution. Due to the fact that high strength ClO_2 solutions can be hazardous to handle and unstable when transported, its use is strictly regulated in many countries. When produced by on-site generation, using binary reagents, Chlorine Dioxide can be very safely and economically generated by iOX in low concentration solutions ready for use. Reducing chemical handling and the environmental impact of water treatment.

Although Chlorine is a powerful disinfectant it is a very reactive oxidiser. Meaning that much of its oxidation capacity can be used up in unwanted side reactions with a wide range of chemicals and organic substances, which may be present in water. The performance of Chlorine is also heavily dependent upon pH, which must be monitored and controlled to ensure Chlorine remains effective.

Comparison of the effectiveness of Chlorine, Bromine and Chlorine Dioxide between the pH range of 6-10



Chlorine Dioxide is far less reactive than Chlorine and many other oxidisers, making it very effective over a very wide pH range. Therefore it has a much higher disinfection capacity to destroy the intended target; bacteria and biological contamination.

Due to its lower reactivity, Chlorine Dioxide is an excellent choice for applications where the formation of toxic THMs, Chloramines, or odour/taste problems must be avoided.

The available power of a given chemical to act as an oxidizer (electron receiver) or as a reducer (electron donor) is commonly called the oxidation-reduction potential (ORP). This property is measured in volts (V). As shown in the ORP table, ClO_2 has 0.95V of oxidation potential, which is a mild oxidizer compared to many other common disinfectants used in water treatment applications.

ORP Table

Oxidant	ORP (V)	Oxidation Capacity
Ozone (O3)	2.07	2e-
Hydrogen Peroxide (H_2O_2)	1.76	2e-
Permanganate ion (MnO4-)	1.68	3e-
Hypochlorous Acid (HOCl)	1.49	2e-
Chlorine (Cl_2)	1.36	2e-
Hypobromous Acid (HOBr)	1.33	2e-
Bromine (Br_2)	1.07	2e-
Chlorine Dioxide (ClO_2)	**0.95**	**5e-**
Sodium Hypochlorite ion (NaOCl-)	0.50	2e-

A single ClO_2 molecule can accommodate up to five electrons (e-), which gives it 2.6 times the oxidative capacity of Chlorine. This makes Chlorine Dioxide a very efficient disinfectant.

Due to its unique properties, Chlorine Dioxide can rapidly penetrate and destroy Biofilm, Algae and Cryptosporidium/Giardia cysts, making it the disinfectant of choice for Legionella control applications and Cryptosporidium decontamination treatments.

Applications for iOX

iOX is an extremely versatile water disinfection solution that can be used for a number of practical applications. No matter the purpose, end users benefit from the most accurate solution available when water safety is of paramount importance:

WATER DISINFECTION FOR DRINKING, BATHING & SHOWERING

Providing safe, clean drinking water is a top priority. iOX can be used to ensure that all potable water in public buildings has been disinfected with consistency and efficiency.

FOOD & BEVERAGE CIP DISINFECTION

iOX can be utilised for the safe disinfection of water supplies within the Food & Beverage Industry in order to meet the strictest of standards.

COMMERCIAL SWIMMING POOL

Effective Biofilm control, filter and balance tank decontamination treatment ensures the highest standards of water hygiene at all times.

COOLING TOWER BIOCIDE TREATMENT

Control of microbiological growth and Legionella prevention within open and closed circuit cooling water systems is greatly simplified using iOX's unique systems.

ODOUR CONTROL IN WASTE PROCESSES

Chlorine Dioxide is an exceptionally efficient solution for odour and bacterial control. Not only that, it is also a safer and superior performing alternative to Hypochlorite, pure Chlorine and many other reagents.

Features & Benefits

When it comes to water disinfection, safety and reliability are two of the most pressing concerns. Not only is iOX the safest, most reliable in-situ generator system on the market, it is also incredibly efficient and accurate.

Compact Design

2-year manufacturer warranty on all four models (5, 10, 20 & 40 g/h generation capacity). Each of which are housed in a sleek case and made from durable, chemical resistant materials.

Highly Durable Construction

Built to last. iOX is constructed using the most advanced and robust materials available in order to ensure the longest possible lifespan for the system.

Unique Batch Generator

iOX's innovative features incorporate our patent pending reaction technology, where generation is performed under a fail-safe vacuum and utilises volumetric reagent measuring and dilution water control. This allows for safer, more accurate dosages and lower strength ClO_2 solutions.

Innovative Batch Process Control

Our innovation makes closing pumps a technology of the past. Replaced with precision dosing under vacuum makes iOX capable of precise reaction chemistry and able to produce batch solutions at a predetermined ClO_2 strength to complement the generation capacity. Volumetric flow sensors measure the precise volume of chemical reagents entering the reactor to achieve >95% conversion efficiency.

Added peace of mind and convenience comes with code protected solution, strength setting, and automatic reagent priming facility after drum change or tank refill from empty.

Simple Operator & Service Management

Our user friendly interface makes life easy for operators. Complete the required low frequency maintenance tasks with three tier access for Operators, Site Technicians and Service Engineers.

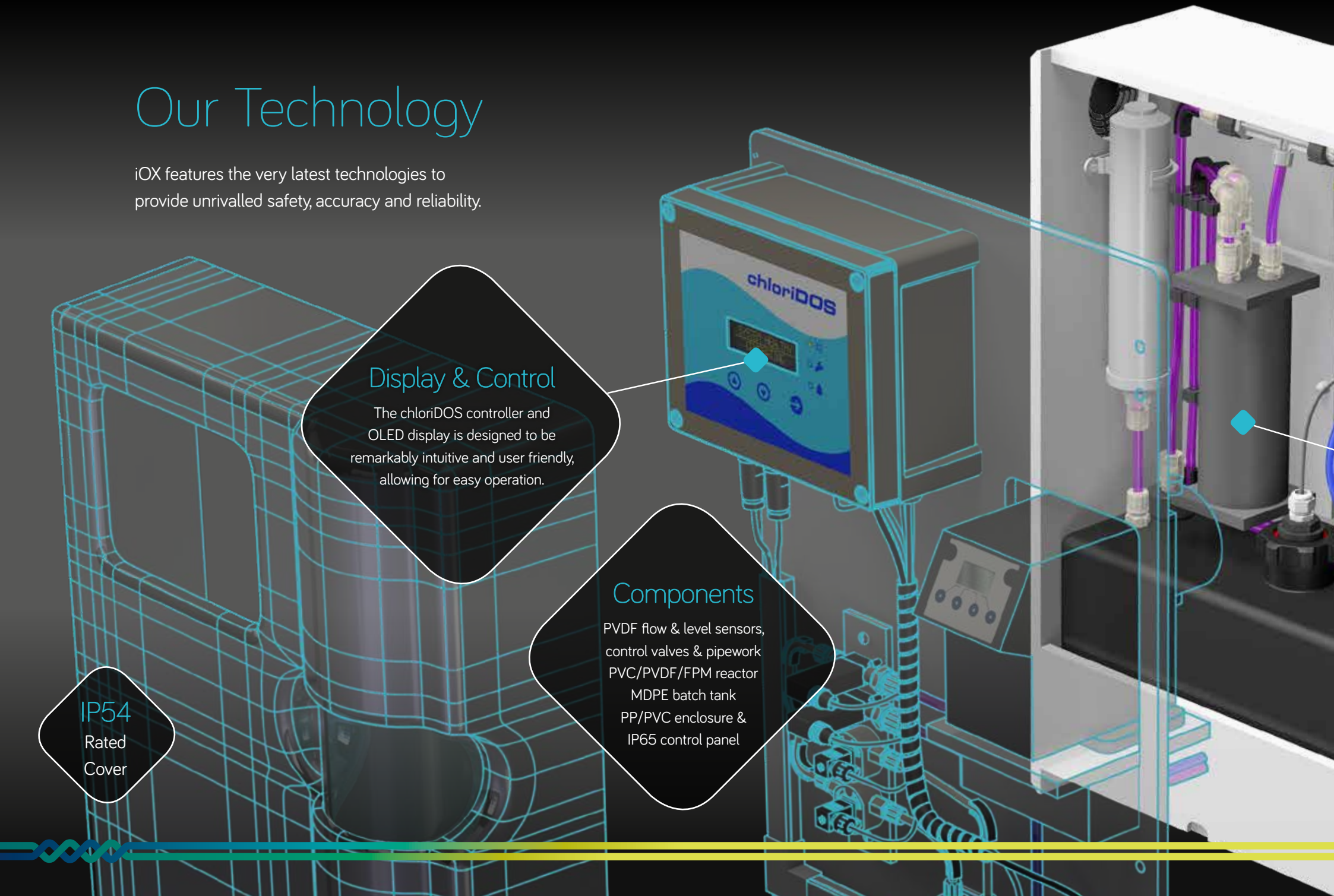
- Display and record site water meter readings and volumetric usage of chemical reagents (in litres) since last refill and past 7 days and 30 days usage.
- Real time clock Fault Log management display with service interval alert and reactor replacement alert.
- Adjustable chemical reagent drum/tank volumetric level alert facility, in litres and optional reagent empty alert switching.
- Watchdog and display of pre/existing chemical reagent dosing status and prevention of chemical imbalance to reaction chemistry.

Process Status & Alarms

Information is always at your fingertips and easy access to the iOX system lets you know that it is in perfect working order at all times. Be that through the buildings management system or remotely. Our advanced alarm system alerts users on a wide range of potential issues, including chemical over or under feed, low water flow, empty chemical supply and much more.

Our Technology

iOX features the very latest technologies to provide unrivalled safety, accuracy and reliability.



Display & Control

The chloriDOS controller and OLED display is designed to be remarkably intuitive and user friendly, allowing for easy operation.

Components

PVDF flow & level sensors, control valves & pipework
PVC/PVDF/FPM reactor
MDPE batch tank
PP/PVC enclosure & IP65 control panel

IP54

Rated Cover

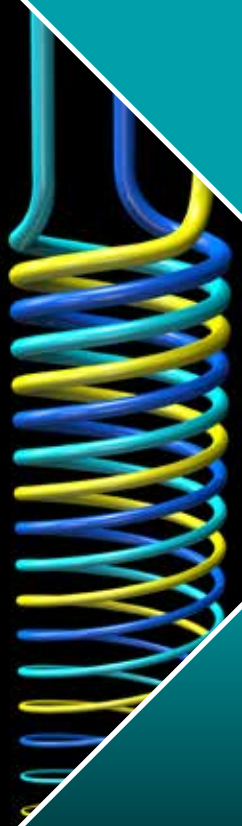
Connectivity

MODBUS connectivity keeps iOX adaptable with flexible plug and play once configured.

Reaction of reagents under safe vacuum mixing process providing

95%

conversion efficiency



Telemetry

iOX's telemetry system monitors and alerts on a wide range of site conditions, including reagent volume usage, site water metre readings, status, and fault diagnosis and much more. It can also be optionally upgraded to provide remote access communication via the Internet.

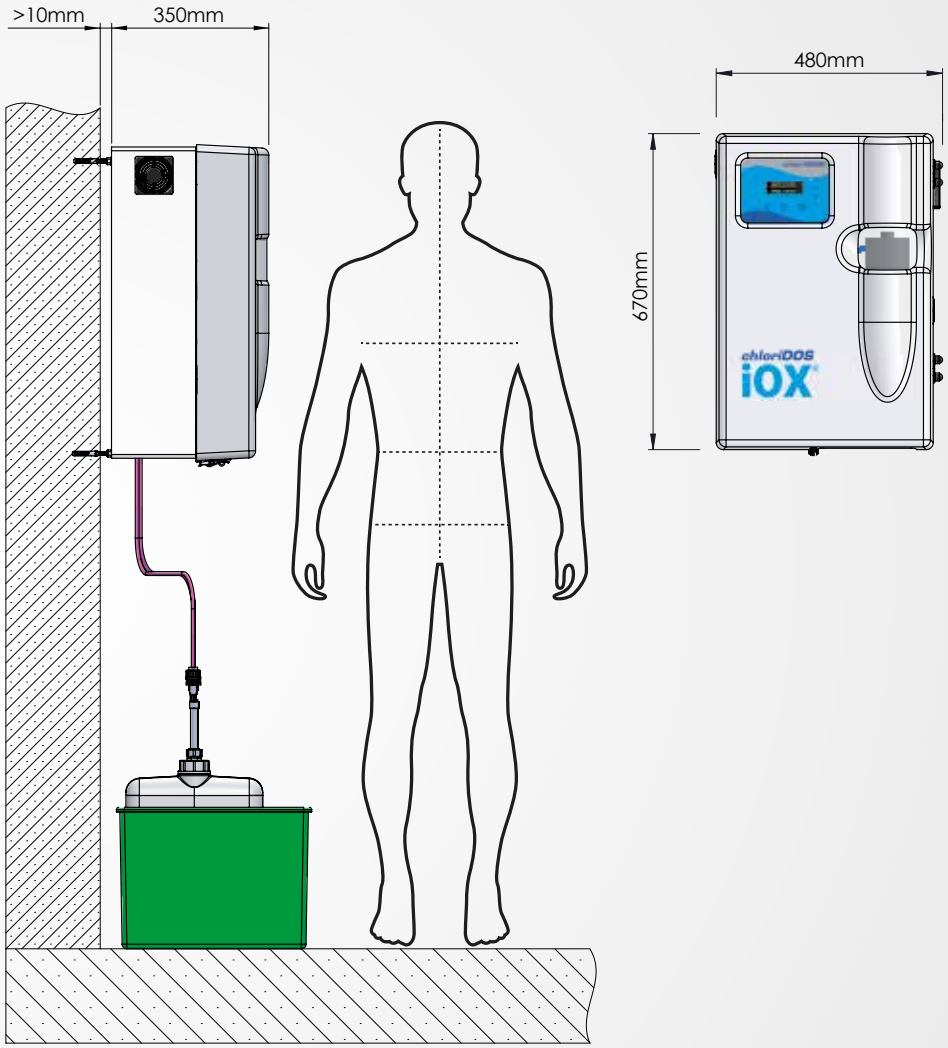
Quality UK Manufacturing

chloriDOS iOX is manufactured to the highest possible specifications using high grade materials and components, manufactured in Great Britain.

Installation

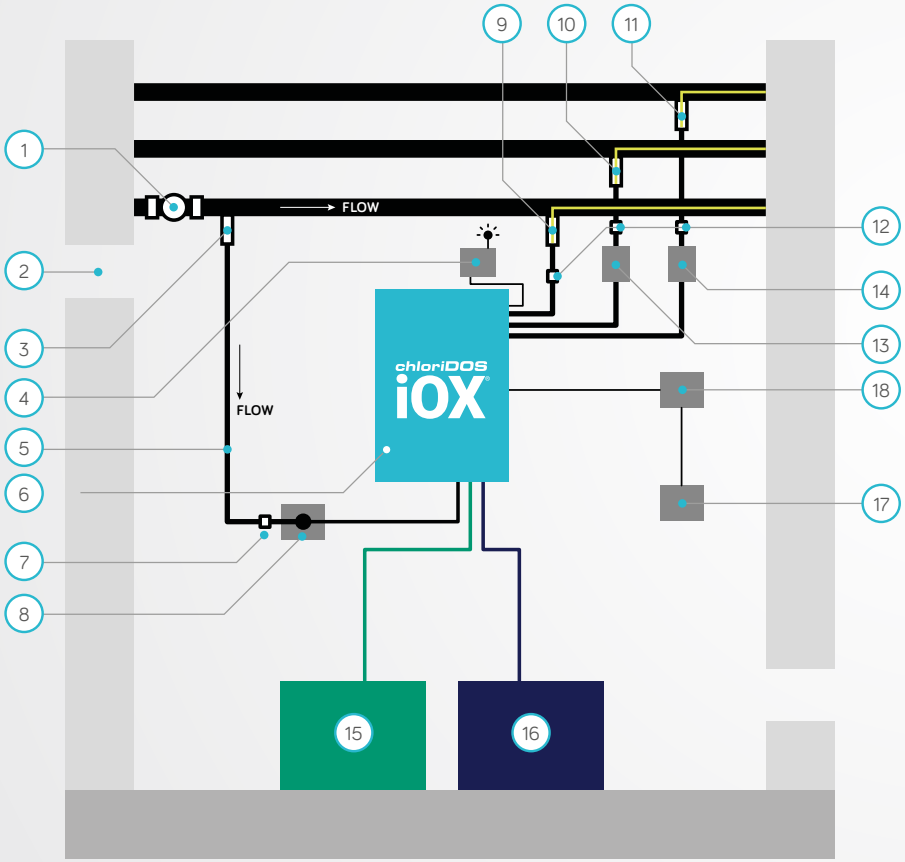
The compact modular design of the iOX unit makes installation, access and servicing safe and easy. For added peace of mind, all Gaffey manufactured products are made fully wet and electrically tested before dispatch.

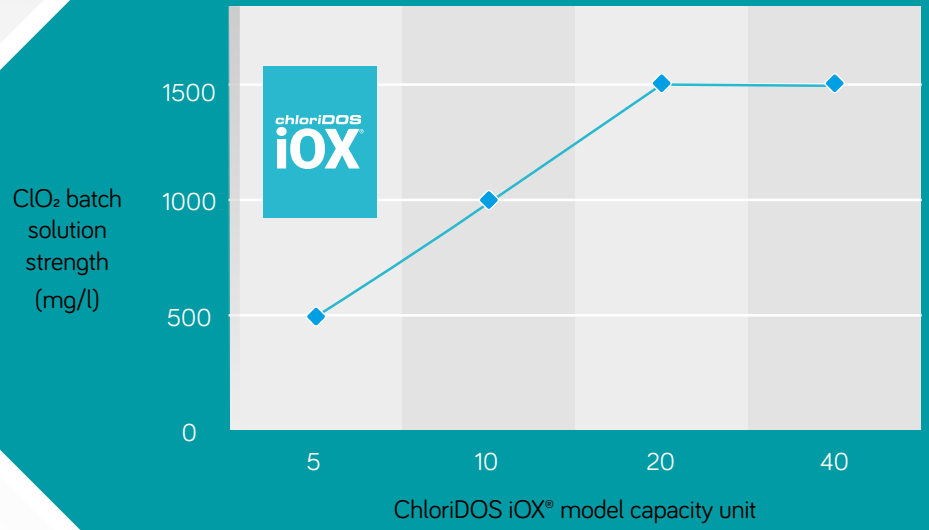
Pre-commissioned Skid systems, with secure chemical reagent storage, offer reduced installation time and cost



Scalability

iOX negates the need for costly additions when scaling up for larger system requirements. Thanks to the original system capacity, additional circuits or demands simply need extra dosing pumps.





A single iOX unit can scale up in application and increase solution strength by simply adding more dosing pumps and quick calibration.

Typical system overview

1	Site Flow Meter
2	Natural Ventilation
3	Dilution Water Take-off
4	Comms Device (optional)
5	Dilution Water Supply Line
6	iOX® System
7	Customers Check Valve
8	Water Pressure Regulator
9	Injection Point 1
10	Injection Point 2
11	Injection Point 3
12	Pressure Relief Valve (optional)
13	Secondary Dosing Pump
14	Tertiary Dosing Pump
15	Acid Tank with Bund
16	Chlorite Tank with Bund
17	Gas Sensor (optional)
18	Gas Alarm Panel (optional)

Technical Summary

Offering a safe and highly efficient solution for a wide range of Chlorine Dioxide applications, iOX is a flexible, expandable system which can adapt to your specific requirements. With the addition of the optional telemetry unit, the iOX can greatly reduce the workload for Site Service Technicians and Building Services Managers by providing precise, real-time remote monitoring of system performance and chemical stocks.

Inputs	Outputs
Site Flow Meter	Alarm Relay 1
Remote Inhibit	Alarm Relay 2
Emergency Stop	Comms (Option): RS485 MODBUS/GSM
Acid Empty (Level Switch)	
Chlorite Empty (Level Switch)	
Aux Alarm	

	Unit	ChloriDOS iOX® model capacity			
		5	10	20	40
Chlorine Dioxide (ClO_2) Capacity	g/h	5	10	20	40
ClO_2 Generation Strength	%	2	2	2	2
ClO_2 Batch Solution Strength	mg/l	500	1000	1500	1500
ClO_2 Batch Solution Production Rate	l/h	9.5	10	13.5	26.9
ClO_2 Batch Tank Nominal Volume	l	8.5	8.5	8.5	8.5
Power Supply	ø	110 - 240VAC / ø1 / 50-60Hz			
Power Rating	VA	20	20	20	20

Support Services & Training

Our system specifiers can be confident that safe, correct installation and high quality maintenance can be provided through our network of approved Service Partners. All Service Partners receive training to our exacting standards, to enable a comprehensive understanding of installation, service requirements and ensure the integrity and performance of our products at all times.

For more information

Visit **www.gaffey.co.uk**
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Email **info@gaffey.co.uk**

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