

**WCS Group**

Safe Efficient Compliance

MARLOWE Critical Services

## GENOX

Safe alternative to ClO<sub>2</sub>

Low hazard HOCl biocide

Cost effective – from 4 pence/  
m<sup>3</sup> of treated water

DWI approved

HSG274 - HOCl is the most  
effective form of Chlorine

Used widely in the NHS

### Suitable for...

Hot / cold systems

Primary disinfection

Secondary disinfection

Hospitals

Hotels

Care homes

Schools

Legionella control

Drinking water

Horticulture

Breweries

Dairies

Food processing

And more ...



# GENOX

Produces low hazard, HOCl biocide NEUTHOX® for primary and secondary disinfection.



### Cost effective, safe and powerful biocide for large and small systems

A specially developed GENOX Generator System uses electrolysis of brine to generate a biocide (NEUTHOX®) on demand. NEUTHOX® is a powerful, proven disinfectant that controls biofilm and destroys Legionella and Pseudomonas and is effective even at 40-50°C. The active ingredient in NEUTHOX® is hypochlorous acid (HOCl) which is produced naturally in the human body within white blood cells to fight infection.

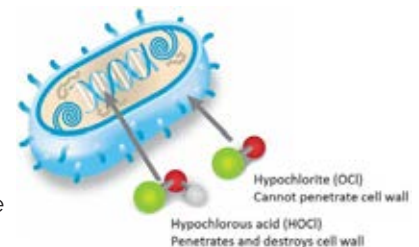
HOCl is lethal to pathogens. It is low hazard, easy to handle and easy to dose. Generation is inexpensive and HOCl is stored securely in a drum. The unit merely requires water, Genox salt and electricity.

A wide range of units are available and all are compact allowing for simple retro fitting to areas with small available space footprints. Horticultural units are also available.

### How it works

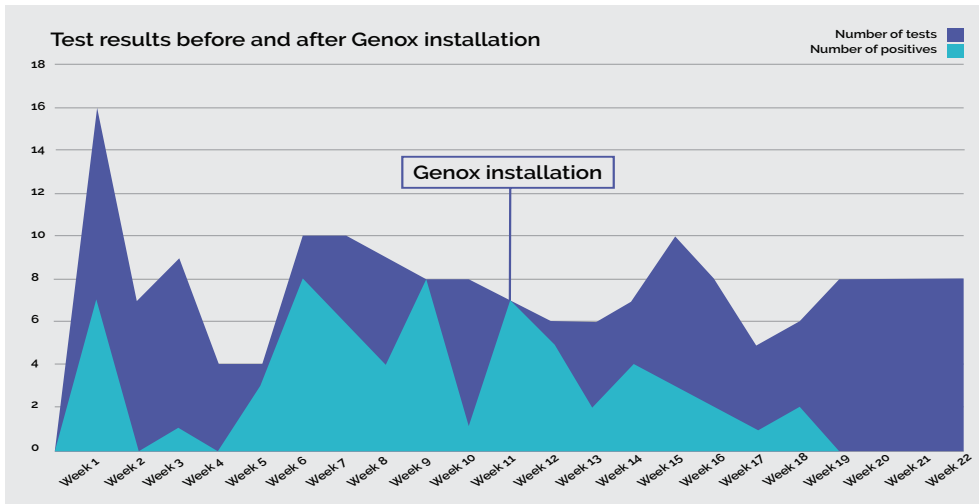
HOCl renders bacteria inactive and achieves its results by a two-stage disruptive process. On breaching the bacteria cell wall, it interacts chemically with the cell's proteins, attacking the cell's DNA and causing the whole cell to die.

The cell floods with water and acidic fluid and dies. Once the bacteria has been destroyed, its co-dependent relationship with the biofilm is disrupted and the biofilm begins to break up, bringing Legionella and Pseudomonas levels back or permanently under control to acceptable levels.



NEUTHOX® is approved with food and has no impact on water pH.

A UK school experienced persistent Legionella bacteria counts despite daily flushing, efforts to increase water flow and improve pipework and thermal pasteurisation of the water distribution system. Genox was trialled and eradicated Legionella bacteria counts below detectable levels within weeks.



## Genox compared with conventional chlorine dioxide

### ClO<sub>2</sub>

- Complex Generator maintenance
- Requires supply and dosing of two chemicals
- Danger of Chlorite and Chlorate overdose
- Pre-stabilised ClO<sub>2</sub> has a limited shelf life
- ClO<sub>2</sub> in solution can sometimes be tasted
- Complex control
- Hazardous
- Handling issues
- Relatively expensive to generate

### GENOX producing NEUTHOX®

- Simple, fast Generator maintenance
- No hazardous chemical handling
- HOCl is produced at a low hazard concentration
- HOCl stored in secure 50-200L tanks
- No taste, no colour, reduced danger of over-dosing
- Easy monitoring, control and adjustment remotely (optional)
- Ecologically safe
- PPE equipment for low hazard
- Inexpensive and cost effective to generate
- Easy training to measure the system reserve

## Multiple applications with units tailored to needs, flow and application



Model T05



Model T10



Model T20

### T00

Owner / Operator Manual  
Install Guide (we will fit)  
pH: 8.5  
9-15L/hour options  
500 x 640 x 250mm (W x H x D)  
Lease finance option



### T05

Owner / Operator Manual  
Install Guide (we will fit)  
ORP sensor and transmitter  
Injection kit  
pH: 8.5  
9-15L/hour options  
500 x 640 x 250mm (W x H x D)  
Lease finance option



### T10

Owner / Operator Manual  
Install Guide (we will fit)  
pH 6-8.5  
30-100L/hour options  
708 x 840 x 333mm (W x H x D)  
Lease finance option



### T15

Owner / Operator Manual  
Install Guide (we will fit)  
Dosing pump  
Dosing kit  
pH: 6-8.5  
40-100L/hour options  
708 x 840 x 333mm (W x H x D)  
Lease finance option



### T20

Owner / Operator Manual  
Install Guide (we will fit)  
pH: 6-8.5  
125-400L/hour options  
850 x 1440 x 460mm (W x H x D)  
Lease finance option



### T10

Owner / Operator Manual  
Install Guide (we will fit)  
Brine Tank – KCl (160L)  
Brine Tank – NaCl (140L)  
NEUTHOX® Buffer Tank (100L)  
40-100L/hour options  
pH: 8.5  
708 x 840 x 333 (W x H x D)  
Lease finance option



### T15

Owner / Operator Manual  
Install Guide (we will fit)  
Brine Tank (160L)  
Brine Tank – NaCl (140L)  
NEUTHOX® Buffer Tank (100L)  
40-100L/hour options  
pH: 8.5  
708 x 840 x 333 (W x H x D)  
Lease finance option



### T20

Owner / Operator Manual  
Install Guide (we will fit)  
Brine Tank - KCl (400L)  
Brine Tank – NaCl (140L)  
200-400L/hour options  
pH: 8.5  
708 x 840 x 333 (W x H x D)  
Lease finance option



#### GENOX Generator

Version		L/hour*
NEUTHOX® Production Capacity (+ or - 10%)		
Chloride Content in NEUTHOX®		mg/L*
Chlorate ClO <sub>3</sub> Content in NEUTHOX®		mg/L*
Perchlorate ClO <sub>4</sub> Content in NEUTHOX®		mg/L*
Free Active Chlorine		ppm*
pH Value		
Approx NaCl Consumption		Kg/day**
Max Pre-fuse		A
Max Power Consumption		W
Voltage		v.Hz
Power Cable Length		m
Enclosure Class, Electrical Cabinet		IP
Required Water Pressure		Bar
Max Drain Back Pressure		Bar
Ambient Temperature Tolerance		oC
Min Required Room Ventilation		m <sup>3</sup> /h
Recommended Running Hours		h/day
Max Running Hours		h/day
Water Connection Hose Length		m
Water Connection (BSP Male)		Inch
Drain Connection (Push-in)		mm
Drain Hose (Min Inner Diameter)		mm
Drain Hose (Max Length)		m
<b>Dosing Pump</b> (type and manufacture may alter)		
Max Flow Rate		L/h
Max Pressure		Bar
Suction Head		mWg
Max Pre-fuse		A
Max Power Consumption		W
Voltage (EU)		V.Hz
Placement		
Dimensions (Width, Height, Depth)		mm
Brine Tank Capacity, NEUTHOX® Tank Capacity		L
Weight (subject to pump types and cell configuration)		Kg
Sound Pressure		dB(A)

T00			T05 inc dosing pump							
LC	LC	STD	LC	LC	LC	LC	LC	LC	STD	
9	15	15	9							15
1,000	1,700	2,000	1,000	1,000	1,000	1,700	1,700	2,000		
14	14	15	14	14	14	14	14	15		
N/A			N/A							
500			500							
8.5			8.5							
0.4	0.8	1	0.4	0.4	0.4	0.8	0.8	1		
13			13							
380	400	400	410	410	410	430	430	430	430	
200-240 VAC (+ or - 10%); 50-60Hz			200-240 VAC (+ or - 10%); 50-60Hz							
3			3							
54			54							
1.5-6.2			1.5-6.2							
0.2			0.2							
5<T<40			5<T<40							
7	12	12	7	7	7	12	12	12	12	
15			15							
20			20							
1			1							
1/2 inch			1/2 inch							
6			6							
4			4							
5			5							
N/A			Grundfos	Grundfos	Grundfos	Grundfos	Grundfos	Grundfos		
			6	6	6	20	17	20		
			6	7	10	7	7	7		
			3							
			13							
			40	23	22	35	24	35		
			230 VAC (+ or - 10%); 50-60Hz							
			External							
500 x 640 x 250			500 x 640 x 50							
33,33			33,33							
30	30.6	30	30.5			30.6				
51			52							

\* These values can vary by + or - 10%

\*\* At 20°C, water hardness 400ppm, 20-hour operation

#### GENOX Generator

Version		L/hour*
NEUTHOX® Production Capacity (+ or - 10%)		
Chloride Content in NEUTHOX®		mg/L*
Chlorate ClO <sub>3</sub> Content in NEUTHOX®		mg/L*
Perchlorate ClO <sub>4</sub> Content in NEUTHOX®		mg/L*
Free Active Chlorine		ppm*
pH Value		
Approx NaCl Consumption		Kg/day**
Max Pre-fuse		A
Max Power Consumption		W
Voltage		v.Hz
Power Cable Length		m
Enclosure Class, Electrical Cabinet		IP
Required Water Pressure		Bar
Max Drain Back Pressure		Bar
Ambient Temperature Tolerance		oC
Min Required Room Ventilation		m <sup>3</sup> /h
Recommended Running Hours		h/day
Max Running Hours		h/day
Water Connection Hose Length		m
Water Connection (BSP Male)		Inch
Drain Connection (BSP Male)		Inch
Drain Hose (Min Inner Diameter)		mm
Drain Hose (Max Length)		m
<b>Dosing Pump</b> (type and manufacture may alter)		
Max Flow Rate		L/h
Max Pressure		Bar
Suction Head		mWg
Max Pre-fuse		A
Max Power Consumption		W
Voltage (EU)		V.Hz
Placement		
Dimensions (Width, Height, Depth)		mm
Brine Tank Capacity, NEUTHOX® Tank Capacity		L
Weight		Kg
Sound Pressure		dB(A)

T10			T15 inc dosing pump			
LC	LC	LC	STD	STD	STD	STD
30	50	75	40	100	40	100
1,700			3,800			
14	14	15				
N/A			N/A			
500			500			
8.5			6 - 8.5	6 - 8.5	6 - 8.5	
1.9	3	4.9	4	11.3	4	11.3
13			13			
775	1,125	1,325	675	1,590	675	1,590
200-240 VAC (+ or - 10%); 50-60Hz			200-240 VAC (+ or - 10%); 50-60Hz			
3			3			
54			54			
2.5-6.2			2.5-6.2			
0.2			0.2			
5 < T < 40			5 < T < 40			
18	24	30	15	36	15	36
15			15			
20			20			
1.3			1.3			
1/2 inch			1/2 inch			
1/2 inch			1/2 inch			
12			12			
5			5			
N/A			Grundfos	Grundfos		
			60	150		
			10	4		
			2			
			13			
			62	110		
			230 VAC (+ or - 10%); 50-60Hz			
			External			
708 x 840 x 333			708 x 840 x 333			
100,100			100,100			
55			53	55	53	55
51			51			

\* These values can vary by + or - 10%

\*\* At 20°C, water hardness 400ppm, 20-hour operation

#### GENOX Generator

Version  
 NEUTHOX® Production Capacity (+ or - 10%)  
 Chloride Content in NEUTHOX®  
 Free Active Chlorine  
 pH Value  
 Approx NaCl Consumption  
 Max Pre-fuse  
 Max Power Consumption  
 Voltage  
 Power Cable Length  
 Enclosure Class, Electrical Cabinet  
 Required Water Pressure  
 Max Drain Back Pressure  
 Ambient Temperature Tolerance  
 Min Required Room Ventilation  
 Recommended Running Hours  
 Max Running Hours  
 Water Connection Hose Length  
 Water Connection (BSP Male)  
 Drain Connection (BSP Male)  
 Drain Hose (Min Inner Diameter)  
 Drain Hose (Max Length)  
**Dosing Pump**  
 Max Flow Rate  
 Max Pressure  
 Suction Head  
 Max Pre-fuse  
 Max Power Consumption  
 Voltage (EU)  
 Placement  
 Dimensions (Width, Height, Depth)  
 Brine Tank Capacity, NEUTHOX® Tank Capacity  
 Weight  
 Sound Pressure

L/hour\*  
 mg/L\*  
 ppm\*  
 pH  
 Kg/day\*\*  
 A  
 W  
 v.Hz  
 m  
 IP  
 Bar  
 Bar  
 oC  
 m3/h  
 h/day  
 h/day  
 m  
 Inch  
 Inch  
 mm  
 m  
 L/h  
 Bar  
 mWg  
 A  
 W  
 V.Hz  
 mm  
 L  
 Kg  
 dB(A)

T20				
LC	LC	LC	LC	STD
125	250	200	300	400
1,700		3,800		
		500		
6 - 8.5				
12.2	24.3	29.5	34.3	38.9
16				
2,260	4,420	2,620	3,820	5,140
200-240 VAC (+ or - 10%); 50-60Hz				
3				
54				
2.5-6.2				
0.2				
5 < T < 40				
34	114	63	93	126
15				
20				
1.3				
1/2 inch				
1/2 inch				
12				
5				
N/A	N/A	N/A	N/A	N/A
850 x 1440 x 460				
350, 350				
180	190	185	185	190
70				

\* These values can vary by + or - 10%  
 \*\* At 20°C, water hardness 400ppm, 20-hour operation

#### GENOX Generator

Version  
 NEUTHOX® Production Capacity (+ or - 10%)  
 Chloride Content in NEUTHOX®  
 Free Active Chlorine  
 pH Value  
 Approx KCl Consumption  
 Approx NaCl Consumption  
 Max Pre-fuse  
 Max Power Consumption  
 Voltage  
 Power Cable Length  
 Enclosure Class, Electrical Cabinet  
 Required Water Pressure at 15L/min  
 Max Drain Back Pressure  
 Ambient Temperature Tolerance  
 Min Required Room Ventilation  
 Recommended Running Hours  
 Max Running Hours  
 Water Connection Hose Length  
 Water Connection (BSP Male)  
 Drain Connection (BSP Male)  
 Drain Hose (Min Inner Diameter)  
 Drain Hose (Max Length)  
**Dosing Pump** (type and manufacture may alter)  
 Max Flow Rate  
 Max Pressure  
 Suction Head  
 Max Pre-fuse  
 Max Power Consumption  
 Voltage (EU)  
 Placement  
 Dimensions (Width, Height, Depth)  
 Brine Tank (KCl) Capacity  
 Brine Tank (NaCl) Capacity  
 NEUTHOX® Tank Capacity  
 Weight  
 Sound Pressure

L/hour\*  
 mg/L\*  
 ppm\*  
 pH  
 Kg/day\*\*  
 Kg/day\*\*  
 A  
 W  
 v.Hz  
 m  
 IP  
 Bar  
 Bar  
 oC  
 m3/h  
 h/day  
 h/day  
 m  
 Inch  
 Inch  
 mm  
 m  
 L/h  
 Bar  
 mWg  
 A  
 W  
 V.Hz  
 mm  
 L  
 Kg  
 dB(A)

T10 HORTICULTURE		T15 HORTICULTURE		T20 HORTICULTURE		
STD_HC	STD-HC	STD-HC	STD-HC	STD_HC	STD_HC	STD_HC
40	100	40	100	200	300	400
3,800		3,800		3,800		
500		500		500		
8.5		8.5		8.5		
4.5	12	4.5	12	34	39	45
0.7	1.6	0.7	1.6	3.5	5.1	6.9
13		13		16		
776.25	1828.5	839	1,891	3,013	4,393	5,911
200-240 VAC (+ or - 10%); 50-60Hz		200-240 VAC (+ or - 10%); 50-60Hz		3 x 400 VAC (+ or = 10%); 50/60 Hz		
3		3		3		
54		54		54		
2.5-6.2		2.5-6.2		2.5-6.2	2.5-6.2	3-6.2
0.2		0.2		0.2		
5 < T < 40		5 < T < 40		5 < T < 40		
15	36	15	36	63	93	126
15		15		15		
20		20		20		
1.3		1.3		1.3		
1/2 inch		1/2 inch		1/2 inch		
1/2 inch		1/2 inch		1/2 inch		
12		12		12		
5		5		5		
N/A	Grundfos	Grundfos	N/A	N/A	N/A	N/A
	60	150				
	10	4				
	2	2				
	13	13				
	62	110				
230 VAC (+ or - 10%); 50-60Hz		230 VAC (+ or - 10%); 50-60Hz		230 VAC (+ or - 10%); 50-60Hz		
External		External		External		
708 x 840 x 333		708 x 840 x 333		850 x 1440 x 460		
160		160		400		
140		140		140		
100		100		Not included		
53	55	53	55	185	185	190
51		51		70		

\* These values can vary by + or - 10%  
 \*\* At 20°C, water hardness 400ppm, 20-hour operation

## A Marlowe Critical Services company

WCS Group is the 'Water Treatment and Hygiene' division of the Marlowe Critical Services Group owned by parent Marlowe plc.

Marlowe plc provides one access point for specialist 'highest standards' across;

**'Compliance & Facilities Software', 'Health and Safety Compliance', 'Retained HR, Employment Law & Health and Safety', 'Occupational Health Services', 'eLearning and Training Services', 'Fire Safety & Security Services', 'Water Treatment & Hygiene Services', 'Air and Ventilation Compliance', 'Asbestos Management Services'**

All nine divisions can be accessed singularly or in combination.

The Group shares many common customers and collectively employs 2,200+ specialists, servicing around 30,000 customers.

**Compliance. Assured.**

## Further reading

**Protect your water**

### Water safety, disinfection and secondary disinfection

Contamination risk from incoming water and water distribution systems **INSIDE** your building

**Choosing an appropriate solution**

Adherence to the UK, Northern Ireland and Scotland Drinking Water Regulations  
Compliance with HSE/CDL8  
Meeting WHO Guidelines for Drinking Water Quality  
Protecting patients, your workforce and building visitors

Water Safety | Disinfection/Secondary Disinfection Overview

**Fact Sheet | Water safety and disinfection**

**WCS Group**  
Safe Efficient Compliance  
MARLOWE Critical Services

### Ultralox40®

Approved hypochlorous acid, the active form of chlorine that works as a biocide

**Ultralox 40®**  
HOCl active form of chlorine as a biocide

Portable and process water  
Article 61 compliant  
DfE approved  
Used widely in the NHS

Suitable for...

- Hot / cold systems
- System purges
- Hospitals
- Hotels
- Care homes
- Schools
- Small offices
- Legionella control
- Domestic systems
- Drinking water
- Breweries
- Dairies
- Food processing
- CB systems
- Leisure centres
- Poultry houses
- And more...

**Low concentration, highly effective colourless biocide**

Ultralox40® is an extremely efficacious fast-acting stable biocide Hypochlorous acid or HOCl. HOCl is manufactured naturally by white blood cells (leucocytes) as part of the body's defence against pathogens. HOCl is also Hypochlorous acid (HOCl) the form of chlorine that is most effective as a biocide. It breaks down biofilm and is highly effective against pathogens and bacteria. Particularly for systems with low and high pressure, high bacteria counts, embedded or systematic biofilm challenges, require repeated flushing and one-off disinfections and therefore have requirements for secondary disinfection.

**Small and medium applications**

Delivered in 25L, 200L or 1,000L package sizes. Can be dosed into incoming mains or a tank, via fixed or mobile delivery and control systems that can be purchased or hired. The standard mobile or free-standing skid mounted systems can be installed and are suitable for systems up to 40m<sup>3</sup>/day. 200L systems are better suited to 40-100m<sup>3</sup>/day requirements.

Consultants are BS EN approved (BS EN 9002007 and BS EN 912009)  
Appearance: colourless  
Sig. 40° Celsius 1  
Inhibited dose rate: 0.2ppm - 5ppm (higher for shock-dosing)  
Drinking Water Hygiene Approval: DfE (L8, L9, L10) under Regulation 18 (L8 of the Water Supply (Water Quality) Regulations 2003 SI No 3074, and The Water Supply (Water Quality) Regulations 2002 SI No 994 (WQ9).

Water Safety | Disinfection\_Ultralox Fact Sheet

**Fact Sheet | Water safety and disinfection**

**WCS Group**  
Safe Efficient Compliance  
MARLOWE Critical Services

### CHLORINE DIOXIDE GENERATORS

Modern day chlorine dioxide water treatment using ClO<sub>2</sub> offers distinct advantages.

**CHLORINE DIOXIDE GENERATORS (ClO<sub>2</sub>)**

Proven non-generation  
No storage of ClO<sub>2</sub>  
Safe - no chemicals are mixed  
Reliable ClO<sub>2</sub> generation  
No dangerous by-products  
Dilute, high quality solution  
Dispenses 700mg/l low concentration solution without storage  
Self-monitoring / connecting

Suitable for...

- Biofilm eradication
- Legionella control
- Membrane systems
- Water distribution systems
- Cooling towers
- Hospitals
- Hotels
- Horticulture
- Breweries
- Dairies
- Food processing
- Universities
- Acid restriction sites
- And more...

**ClO<sub>2</sub> - an effective, low concentration water disinfectant**

ClO<sub>2</sub> is a non-oxidative chlorine dioxide solution that contains no chlorine, no ozone, has a high conversion rate (75%), produces low concentration levels, is highly purely (98% generated in a controlled reaction that is extremely safe, with no storage of ClO<sub>2</sub> because it generated ON DEMAND).

**Beneficial properties of ClO<sub>2</sub>**

- Effective over pH range of 2 - 10
- Doesn't produce THMs
- Reacts with colour-causing compounds
- Breaks down phenols
- Prevents iron and manganese
- Can overcome organic loading
- Penetrates and destroys biofilm
- Portable and process water

**Conventional ClO<sub>2</sub> generation negatives**

- Hard to make and storage is a problem
- UV light, heat and time degrades it
- Chemical mixing generators create by-products, can be corrosive, produce low yield, require accurate dosing
- Electrochemical generators suffer poor conversion, require complex pre-treatment, are maintenance heavy, require accurate dosing

**Introducing new generation, proven ClO<sub>2</sub> chlorine dioxide generators**

Solves all of the problems and perceived limitations of conventional ClO<sub>2</sub> generation and come in a range of models to provide 95 to 6000L/day of ClO<sub>2</sub>.

Water Safety | Disinfection\_ClO<sub>2</sub>IX Fact Sheet

[www.wcs-group.co.uk](http://www.wcs-group.co.uk)

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For a full list of our accreditations please visit: [www.wcs-group.co.uk/accreditations-respository](http://www.wcs-group.co.uk/accreditations-respository)