evoqua
WATER TECHNOLOGIES

CHLOROPAC® MARINE GROWTH PREVENTION SYSTEM

TYPICAL SHIPBOARD INSTALLATION

INTRODUCTION

The Chloropac® sodium hypochlorite generating system is designed to prevent marine growth in the sea water piping, heat exchangers, sea chests and coolers. Thousands of systems have been installed and is the preferred method of ship owners and operators. Low level continuous hypo-chlorination has been shown to be more effective than other types of marine growth prevention systems. Chloropac MGPS have been proven within the marine market for over 40 years, and can boast thousands of installations worldwide.

THE MARINE CHLOROPAC SYSTEM

The Chloropac marine growth prevention system (MGPS), designed specifically for marine shipboard applications, has been engineerd following customer feedback on their specific requirements.

The system offers a range of 0.2 to 0.5ppm chlorine and incorporates control flexibility for up to four sea chests. It is delivered as an electrolyzer featuring the efficient MKIV cells, and switchmode power supply unit, making installation easy. The systems offer real world operational flexibility with temperature and salinity variations 5-32oC and 25 – 45 PSU (14-25g/l.)

BENEFITS

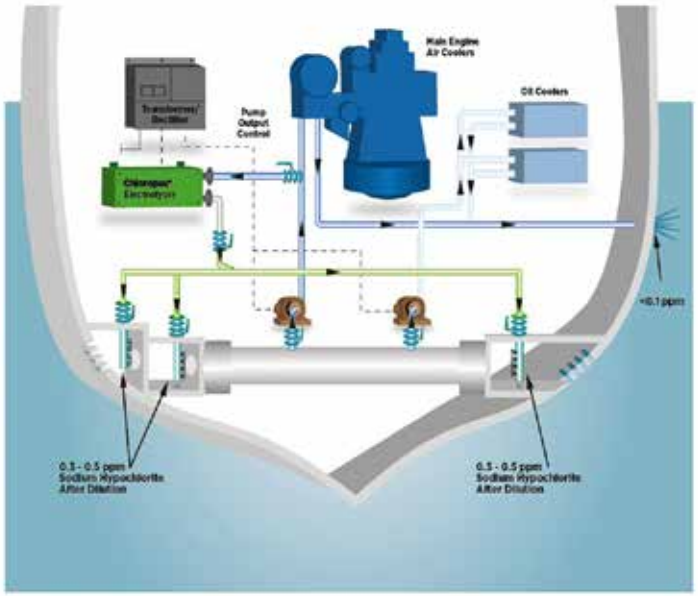
The MKIV Electrolyser design allows systems to be smaller, more efficient and easier to maintain. The MKIV cell has a higher surface area to increase output per cell – up to 6 times more. The improved seawater velocities through the cell offers better self cleaning capabilities, and the modular design allows for simple retrofit to existing systems,or upgrades for any existing Chloropac systems. A simple service exchange of the cells is optional to allow for even faster service times, and reduced down time.

The Chloropac systems are designed to last the lifetime of the vessel, and as a solution for marine growth preventioncan provide up to 300% cost savings against copper anode over a 20 year lifespan.

Evoqua can provide MKIV retrofit kits for existing chloropac marine electrolysers), these enhanced cells provide reduced maintenance and increased chlorine generation while extending the life of your current equipment without the associated capital expenditure.

CHLOROPAC® SYSTEM INFORMATION

										POWER SUPPLY UNIT				ELECTROLYSER			
										DIMENSION			WEIGHT	DIMENSION			WEIGHT
	MODEL	NOMINAL RATED KG/HR (LB/HR)	INPUT POWER kVA	OUTPUT DC VOLT	OUTPUT DC AMP	CONCEN-TRATION PPM	"MIN. FLOW REQ'D M3/HR (GPM)"	S.W. TREATED TO 0.5 PPM M3/HR (GPM)	"PRESS. DROP ACROSS ELECTROLYSER (PSI)"	H mm (inch)	L mm (inch)	D mm (inch)	NET Kg (lbs)	H mm (inch)	L mm (inch)	D mm (inch)	NET Kg (lbs)
MK2M	SB50	0.05 (0.13)	0.7	15	25	25	1.5 (7)	100 (440)	1.5	600 (24)	737 (29)	381 (15)	102 (225)	305 (12)	965 (38)	381 (15)	23 (50)
	SB100	0.1 (0.22)	1.4	15	45	50	1.5 (7)	200 (880)	3	835 (33)	737 (29)	381 (15)	102 (225)	305 (12)	965 (38)	381 (15)	23 (50)
	SB200	0.2 (0.44)	2.6	15	90	100	1.5 (7)	400 (1760)	3	835 (33)	737 (29)	381 (15)	102 (225)	305 (12)	965 (38)	381 (15)	23 (50)
	SB500	0.5 (1.1)	5.8	15	220	100	6 (26)	1000 (4400)	3	835 (33)	737 (29)	381 (15)	107 (235)	305 (12)	965 (38)	381 (15)	32 (70)
MK4M	SB1K	1 (2.2)	9	30	230	77	6 (26)	2000 (8800)	17.4	1070 (42)	540 (21)	930 (37)	139 (306)	835 (33)	1450 (57)	300 (12)	90 (198)
	SB2K	2 (4.4)	18	30	460	154	6 (26)	4000 (17600)	17.4	1070 (42)	540 (21)	930 (37)	169 (373)	835 (33)	1450 (57)	300 (12)	90 198)
	SB3K	3 (6.6)	26	30	685	231	12 (53)	6000 (26400)	20.3	1630 (64)	540 (21)	930 (37)	199 (439)	940 (37)	1875 (57)	300 (12)	155 (342)
	SB4K	4 (8.8)	34	30	910	154	12 (53)	8000 (35200)	20.3	1630 (64)	540 (21)	930 (37)	277 (611)	940 (37)	1875 (57)	300 (12)	155 (342)
	SB5K	5 (11)	42	30	1145	192	12 (53)	10000 (44000)	20.3	1630 (64)	540 (21)	930 (37)	307 (677)	940 (37)	1875 (57)	300 (12)	155 (342)
	SB6K	6 (13.2)	51	30	1375	231	12 (53)	12000 (52800)	20.3	1630 (64)	540 (21)	930 (37)	337 (743)	940 (37)	1875 (57)	300 (12)	155 (342)



Typical Chloropac system

THE PROCESS

A small amount of sea water (26 or 53 GPM) is taken from a sea water line which remains constantly under pressure. The water passes - at high velocity - through the electrolytic cells where part of the salt is converted to sodium hypochlorite. This is then returned to the sea chest and mixes with the incoming sea water. The

cooling water will now contain a trace residual sufficient to prevent the attachment and growth of marine organisms, thus keeping all circuits - from intake to discharge - free from fouling.

Sea water circulating pumps can be interconnected with Chloropac system to ensure the output of sodium hypochlorite generated is automatically adjusted to suit the flow rates on board.

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