Azienda Chimica Genovese ACG ITALY



Since 1947....

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Marine Fouling Why Antifouling Treatment ?

- Antifouling treatment on board ships is carried out with the aim of :
- preventing and eliminating the formation of mussels, clams, seaweed, slimes, etc. inside sea water pipelines, filters, valves etc. which at best reduce the efficiency of the cooling system by causing total or partial blockages, and at worst can pose a real danger by putting engines, generators, and sprinkler systems out of action
- preventing and eliminating the formation of slimes in sea water coolers and condensers which ruin the heat exchange process

Antifouling System (MGPS) COPRON

 Copron copper/aluminium anode system, is marketed as a joint system for antifouling and anticorrosion. Copron operates by releasing copper and aluminium / iron ions into the seawater contained in the sea chest. The former acts against micro and macro marine fouling and the latter acts against corrosion. Only a small concentration, less than 2 ppb, of copper is required for the system to be effective.

Copper / Aluminium Anode System (Cu/Al)

- The copper anode systems consists of copper and aluminium anodes usually mounted in the sea chests.
- By applying DC current to these anodes, the system dissolves ions into the seawater. The copper ions (Cu++) create an environment in which micro/macro organisms (i.e. mussels) cannot live.
- Hence, organisms will not settle and will be transported back into the sea with the seawater.
- As copper is a more noble metal than the material used in the pipe-work, the presence of copper ions in the seawater will cause galvanic corrosion of the pipes, but by fitting an aluminium (AI) or iron (Fe) anode in close proximity to the copper anode, one can achieve some corrosion control by creating an anti-corrosive layer on the internal surfaces of the piping.
- The copper and aluminium anodes are consumed by the dissolution of ions into the seawater.
- As they are installed in the sea chest, they have to be replaced during dry-docking. Hence, the anodes are usually designed for a lifetime of 2-3 years up to 5 years.
- The cost of replacement represents considerable maintenance costs, often neglected by the ship owners when evaluating the costs of various systems.

COPRON INSTALLATION DIAGRAM



COPRON Schematic Diagram

Antifouling System (MGPS SYSTEM) COPRON

- The system consists of 3 parts:
- Electric cabinet (located in engine room)
- Copper anodes (located in sea chests)
- Aluminium/iron anodes (located in sea chests)
- The current generated by power supply in electric panel passes through the anodes installed in the sea chest (usually one copper and one aluminium/iron for each sea chest).
- The incoming seawater is treated with copper ions to combat micro and macro fouling and aluminium/iron ions to reduce corrosion.

Benefits of COPRON

- prevents macro fouling and helps to reduce corrosion
- ensures heat exchangers operate at enough efficiency
- requires minimum manual intervention
- anodes can be supplied to suit the dry-docking interval
- easily & cheaply installed
- cost savings for shipowners

Cost savings for ship owner

- reduces the need for costly cleaning and maintenance of ships cooling systems
- saves on fuel bills by eliminating the need for increased pumping power due to blockages
- very low daily running costs
- increases pipe life by reducing biological and galvanic corrosion

CU / AL / FE ANODE DIA 80 MM. ASSEMBLY

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CU / AL / FE ANODE DIA 120 MM. ASSEMBLY

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COPRON ELECTRIC PANEL WITH 4 OUTLET

COPRON ELECTRIC PANEL WITH 6 OUTLET

JUNCTION BOX FOR ANODES

COPRON ANODES (CU/AL/FE) ASSEMBLY

COPRON ANODES INSTALLED ON THE SEA CHEST

COPRON ANODES & JUNCTION BOX

COPRON ELECTRIC PANEL WITH 6 OUTLET

COPRON ELECTRIC PANEL WITH 4 OUTLET

