

# Offshore Platforms

Biofouling of water intake pumps and pipework on offshore platforms can be a major problem, causing expensive equipment damage and pipework blockages, leading to shut down of vital seawater supplies.

In the case of fire water systems crew safety and structure integrity must be considered. In addition, repairs to damaged pumps and pipe work are both costly and time consuming.

Maintenance managers would consider any remedial actions involving pipe section removal, repair, cleaning and re-installation as major refurbishment work on any operating offshore facility.

## CUPRION® - THE SOLUTION

Cathodic Protection Co. Ltd. (CPCL) has developed a range of CUPRION® anti-fouling systems to protect submerged pumps, seawater intakes and associated pipework against marine growth. Originally the CUPRION® system was developed and utilised for North Sea applications during the early 1970's. Today the system is specified for use on offshore platforms worldwide by many of the major oil & gas offshore operators.

The CUPRION® system is listed on Article 95 of the EU Biocides Regulation (528/2012), which came into effect on 1st September 2015, ensuring CPCL is legally entitled to place the CUPRION® system onto the European market.

CUPRION® operates on electrolytic principles, employing a small d.c. current flow (generally less than 1 kW). This current flow energises copper and aluminium anodes to produce a fully effective, anti-foulant dosing solution. Selected dosing levels vary slightly to suit location and application, however maximum dosing limits utilised for design purposes are 24 µg/litre and 4 µg/litre for copper and aluminium respectively.

Copper is a natural biocide and provides complete protection from hard marine growth with no adverse environmental impact.

Aluminium anodes produce aluminium hydroxide, which combines with the copper ions holding them in solution, keeping pipe work blockage free. Aluminium hydroxide also helps arrest corrosion on internal pipe surfaces.

The CUPRION® system has been successfully applied on all types of seawater intakes from submerged pumps to open intake sea chests. The design of the electrode units can be adapted to suit all application requirements, but are usually mounted on submerged pumps or bolted to the wall of a sea chest.



Where space or weight restrictions are design considerations, CPCL has developed a deck mounted system, that utilises an electrolysis tank with required seawater supply connections.

The CUPRION® anodes are simply mounted in the tank and energised to produce anti-foulant solution, which is delivered to the intake area via suitably rated pipes or hoses.

The reaction chamber is generally mounted on a steel plinth adjacent to the d.c. power unit, making the complete system integral, ideal for maintenance operations. Anti-Fouling electrodes take around 30 minutes to replace.

CUPRION® systems have been installed on all types of offshore structures worldwide, see chart below.



## CUPRION® - IN THE OFFSHORE INDUSTRY

Field/Platform	Country	Client	System Description
Valhall West Flank	Norway	Eureka Pump	CUPRION® system for sea water lift pump
Umm Lulu & NASR	UAE	Various	CUPRION® system installed with removable inlet strainer
ANOA & AGX	Indonesia	Premier Oil	CUPRION® Deck system for sea water lift pumps
Ravenspurn	UK	Perenco	CUPRION® system for sea water lift pump
Forties A/B/C/D/E	UK	Apache	CUPRION® fitted to sea water lift and fire water pumps
Rough Field	UK	Centrica	CUPRION® fitted to cooling water, sea water lift and fire water pumps to replace EC system