# FACTORS AFFECTING CATHODIC PROTECTION

| | |
|---|---|
| **Salinity & Conductivity** | The corrosion rate in seawater is up to 10 times faster than that in freshwater. Current requirements increase with salinity and thus seawater is low in resistivity.<br>Freshwater is a less conductive electrolyte and is high in resistivity. It is a poor conductor and requires higher driving potentials. Magnesium anodes are widely used in freshwater applications. |
| **Water Flow Rate** | The increased velocity of water will increase the vessel's cathodic protection requirements. The water flow rate can be affected in high volume traffic areas (such as ports or busy recreational areas) and in high tidal areas. |
| **Acidity** | The pH of water affects the rate of corrosion. With a decrease in pH levels there is an increase in the rate of corrosion. |
| **Protective Coatings** | Protective coatings such as paints and propeller applications can improve the cathodic protection of a vessel. As protective coatings deteriorate there in an increase in the rate of corrosion for the exposed metal. |
| **Infrastructure** | The construction materials of jetties and walkways can impact the rate of corrosion in a marina environment. This depends on the composition of materials used and the surface area of the infrastructure in the water when compared to the relative voltage generated of other submerged metallic fittings. |
| **Proximity of Other Vessels** | The proximity of other metals in the water affects the distance and often strength of ion flow between an anode and cathode. Consider a scenario of the relation between two vessels in a yacht club with neighbouring pens in contrast to the rate of corrosion between identical vessels on swing moorings 200m away. |
| **Connection to Shore Power** | When a vessel is connected to mains power it is also connected to that shore earth grounding system through the earth grounding on the shore power cable. The connection between vessels via the earth grounding conductor provides for galvanic corrosion between dissimilar metals on the vessels' connection. |



15a Hector Street, Osborne Park, Perth WA 6017, Australia
[P] +61 (0)8 9204 3476, www.marineprotectionsystems.com.au