

General Information Sheet:

Electrochemical Protection Systems (EPS)

For Marine Structures



Images from top to bottom:

- Savcor's EPS for steel structures was used for the protection of all immersed steel and reinforced concrete piles underneath the Sydney Opera House, Australia.
- EPS for steel structures is used for corrosion protection in the majority of new structures worldwide.

Most of our infrastructure is located in marine exposed areas or close to the sea. Direct exposure to seawater and windborne spray results in highly corrosive situations. Salt from seawater is extremely aggressive to steel and initiates pitting corrosion and rapid breakdown of the paint system. Repair and maintenance costs can become excessive unless good corrosion control practice is applied.

Savcor has extensive experience in corrosion control of marine structures and in providing cost effective corrosion control programs. A team of multi-disciplined professional engineers investigates the problems and delivers proven state-of-the-art technology. This provides a long-term corrosion-free solution fitting the clients' needs with safety and environmental considerations always top-of-mind.

Cathodic protection systems using sacrificial anode and impressed current anode systems have been used successfully to provide protection to coated and bare steel structures.

The selection of the most cost effective and technically appropriate anode system is subject to various considerations.

Sacrificial anode system

The main advantages of sacrificial anode systems are:

- Lower installation costs for small structures;
- Minimum maintenance requirements and therefore



Images from top to bottom:

- EPS can be used for the corrosion protection of the immersed parts of reinforced concrete piles. The photo shows major deterioration of concrete and total section loss of reinforcement in reinforced concrete piles in the tidal and immersed sections of the piles.
- Substructure of Sydney Opera House showing Savcor's electrochemical protection system of steel piles, reinforced concrete piles, A-frames and walkways.

The services provided by Savcor include:

- EPS design and technical support;
- Supply of the EPS components;
- EPS installation; and
- EPS commissioning and monitoring.

reduced costs; and

- Unlikely adverse effects on other structures.

Limitations:

- Ineffective in high resistivity environments, such as river mouths;
- The life of the system tends to be relatively short and;
- The cost of the system is very high for large, bare or poorly coated structures.

Impressed current cathodic protection system

The main advantages of this system are:

- High driving voltage in all environments which exhibit various resistivities;
- Flexibility for system control and adjustment;
- A longer anode life; and
- Ease of installation of the anode system.

The impressed current CP system requires maintenance for the life of the structure and power supply costs.

It does have a high installation cost for very small structures.

The impressed current cathodic protection system is the only applicable system for large projects with a high resistivity environment and poorly coated or bare steel structures.

Savcor's electrochemical protection systems (EPS) include the use of the state-of-the-art RECON digital remote control system.

The RECON system operates in potentiostatic mode that allows:

- Major reduction of current consumption costs;
- Extension of the anode life; and
- A system operation providing optimum protection which guarantees full corrosion protection of the structure.