



**VECTOR
CORROSION
TECHNOLOGIES**



Galvashield® Jacket Systems

**Mitigating Corrosion to
Extend the Life of Marine Piles**



*Corrosion of Prestressed Concrete Pile
in Saltwater Tidal Zone*

Marine Pile Corrosion

Concrete and steel piles in the marine environment are subject to aggressive conditions that can cause serious deterioration and on-going maintenance repairs. In particular, coastal structures in seawater will eventually become highly concrete contaminated. After corrosion initiates, cracking and rust staining will become visible and eventually the concrete will become damaged by spalling and delamination. Left unchecked, marine pile corrosion will lead to high maintenance costs and major rehabilitation requirements.

Pile Exposure and Corrosion

The severity of pile corrosion is correlated to the surrounding environment. Corrosion is significantly driven by moisture levels and chlorides present in seawater.

Underwater Zone - submerged sections of piles are continuously wet but are less frequently affected by corrosion damage.

Tidal Zone - the tidal area is subjected to regular wet-dry cycling and are at high risk of corrosion, especially in saltwater environments.

Transitional Zone - the pile section above mean high tide is exposed to moisture, chloride saturation and oxygen from periodic splashing and is subject to aggressive corrosion.

Atmospheric Zone - atmospherically exposed sections of concrete piles are contaminated by airborne chloride deposition.

Brackish Water Exposure - when fresh water and saltwater mix, chlorides are present at lower concentrations.

Fresh Water Exposure - a less corrosive environment than saltwater but corrosion can still occur, particularly near the water-air interface.

Dry Land Exposure - non-marine piles and columns exposed to chlorides such as deicing salts can also benefit from galvanic jacketing.

Galvashield® Jackets, an Effective Solution

In the battle against pile corrosion, galvanic jackets are a durable, effective and low maintenance option to extend the life of marine piles. The Galvashield Jacket System is available in a range of models and options to suit almost any application and can provide an estimated service life of 20 to 50+ years.

Inside the galvanic jackets, zinc - in different forms - is used as a sacrificial anode to protect the reinforcing steel. Lightweight stay-in-place forms are placed around the pile and contain the portland cement grout or concrete infill. Bulk anodes can be attached to the pile below mean low tide to protect submerged sections.

Galvashield® Jacket System Options

Jacket Model	Activation Method	Form Options	Anode Description
Galvashield Tidal Jacket	Saltwater	<ul style="list-style-type: none"> • FRP 	Zinc mesh anode
Galvashield Tidal Plus Jacket	Saltwater	<ul style="list-style-type: none"> • FRP • Modular PVC 	Zinc anode strips inside wicking fabric
Galvashield DAS Jacket	Alkali pH >14	<ul style="list-style-type: none"> • FRP • Modular PVC • Removable Forms 	Zinc anode strips inside self-activating mortar

Selecting the most effective galvanic jacket is primarily based on the pile exposure condition.

Galvashield Tidal Jackets are appropriate for tidal zone protection and include high purity bare zinc mesh anodes inside a stay-in-place FRP form. The open-bottom jacket design allows seawater to penetrate into the jacket through direct saturation.

Galvashield Tidal Plus Jackets use innovative wicking fabric around bare zinc anodes. The fabric wicks saltwater well above high tide to mitigate corrosion in both the tidal and the transitional zones.

Galvashield DAS Jackets incorporate premanufactured alkali-activated distributed anodes that do not require saltwater exposure to function. These jackets can be used in all conditions and all elevations including saltwater, brackish water, freshwater and dry land applications.



Galvashield Tidal Plus Jacket with Wicking Fabric Anodes (prior to jacking)



Galvashield Tidal Plus Jacket with Modular PVC Stay-in-Place Formwork



Galvashield Tidal Jacket with Zinc Mesh



Galvashield Tidal Jackets in Service



Galvashield DAS Jackets Prior to Installation



Galvanode DAS Jackets Installed

Galvashield® Jacket Systems

Contact Vector today for assistance with galvanic jacket selection and design.

Exposure Condition		Tidal Jacket	Tidal Plus Jacket	DAS Jacket
Saltwater	Tidal	✓	✓	✓
	Transitional		✓	✓
	Atmospheric			✓
Brackish Water				✓
Freshwater				✓
Dry Land				✓

Vector Corrosion Technologies has earned numerous awards and patents for ground breaking innovations in corrosion mitigation technologies and services.

- Galvanic Protection Systems
- Impressed Current Cathodic Protection
- Electrochemical Treatments
- Post-Tensioned Services

Contact Vector for solutions to all your concrete and corrosion problems.



Innovative Solutions for Corrosion Problems™

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