VECTOR CORROSION TECHNOLOGIES

Galvashield® FUSION®

Next Generation Corrosion Protection

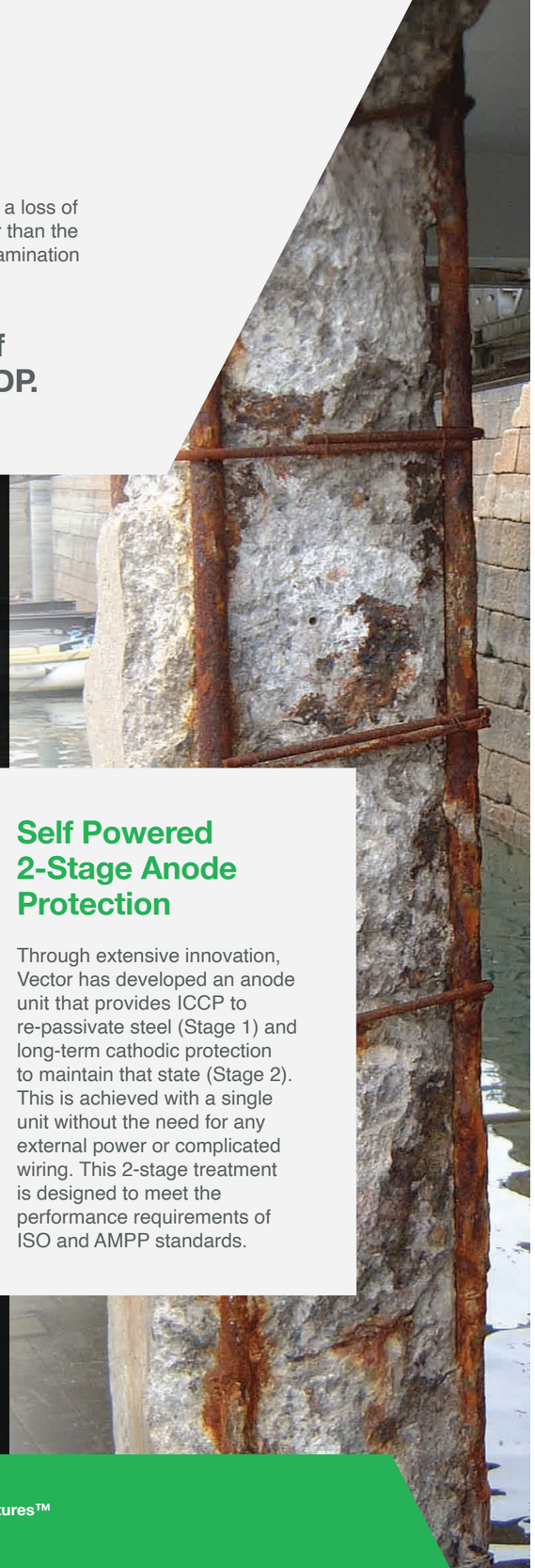
We Save Structures™

Vector-Corrosion.com

The Challenge

Concrete corrosion problems occur when contamination results in a loss of steel passivity. The resulting rust occupies a volume much greater than the steel it consumes. This expansion leads to cracking, concrete delamination and eventual structural implications.

International estimates put the costs of corrosion to an economy at 3–5% of GDP.



What Causes Corrosion?

A number of everyday contaminants can cause steel to corrode in concrete:

- Seawater & airborne salts
- De-icing chemicals
- Carbon dioxide in the atmosphere
- Cast in chlorides
- Sea dredged aggregates

Traditional Cathodic Protection Systems

Traditionally, impressed current cathodic protection (ICCP) has worked by utilizing a small electrical current generated by an external power source to control corrosion. Due to the nature of the technology, power, monitoring and maintenance are all continuously required over its life. Over time, systems can be easily forgotten and neglected. According to an independent report, there is a 50% chance that after 15 years, the system will malfunction and need repair. This percentage increases to 75% after 20 years.

Galvanic corrosion control systems have increased in popularity over the past 20 years due to their simplicity. No external power or monitoring are required for them to function. This makes them an attractive option, even though they have a finite life and their performance cannot be altered once installed.

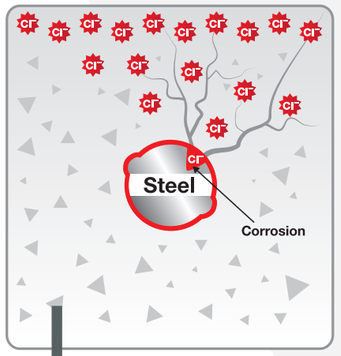
Self Powered 2-Stage Anode Protection

Through extensive innovation, Vector has developed an anode unit that provides ICCP to re-passivate steel (Stage 1) and long-term cathodic protection to maintain that state (Stage 2). This is achieved with a single unit without the need for any external power or complicated wiring. This 2-stage treatment is designed to meet the performance requirements of ISO and AMPP standards.

Our Next Generation Corrosion Protection System

Active Corrosion

- Chloride ions enter concrete
- Chlorides break down passive film
- Corrosion initiates
- Acidic corrosion pits form on steel
- Rust forms and occupies 7–12x volume
- Stress builds within concrete
- Cracking and rust visible

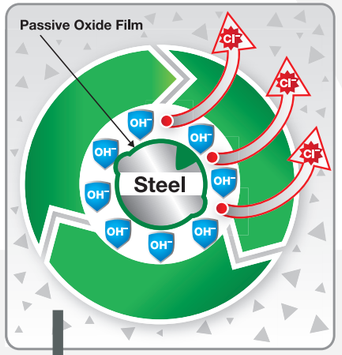


Stage 1 – Passivation

Electrochemical Treatment | 15+ Days*

A high intensity, short-term electrochemical treatment to effectively mitigate corrosion and re-passivate steel. The aim of Stage 1 is to reinstate the alkaline environment around the steel.

- Concrete repairs carried out as required
- High charge capacity delivered
- Alkalinity restored around steel
- Chlorides pushed away from steel surface
- Corrosion mitigated in pits
- Steel passivity is restored
- Stage 1 can be repeated

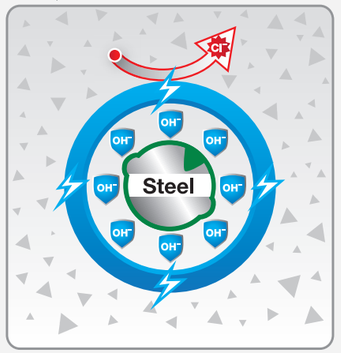


Stage 2 – Maintenance

Cathodic Protection | 30+ Years*

Once Stage 1 is complete, the units automatically switch to a galvanic system, which maintains steel passivity for the life of the system.

- Ongoing protective current delivered to steel
- Steel passivity is maintained
- Chloride continues to be repelled
- Alkalinity continues to increase



*Depending on system design

FUSION®

Available in 3 options for the best fit

Inbuilt power supply passivates active corrosion

Passivity is maintained with galvanic cathodic protection

Galvashield® Fusion® combines the designable performance of an ICCP system with simple maintenance-free performance and installation of a galvanic system.

Galvashield® Fusion® T2 Slim

- Small diameter for fast installation
- Lower steel densities
- Congested steel

Galvashield® Fusion® T2 Standard

- Large capacity
- Custom-designed solution for global or targeted protection

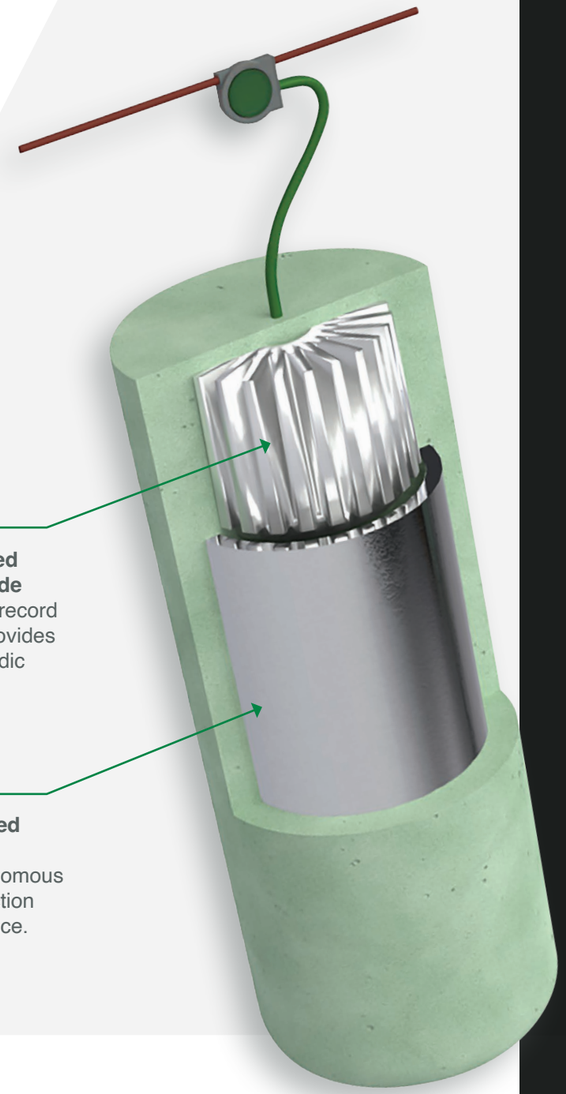
Galvashield® Fusion® T2 X

- 2-stage anode for extreme environments and high temperatures

Global vs Targeted Protection

Global
Protect the entire structure or large structural elements

Targeted
Only protect areas of active corrosion or high corrosion risk



Applications

- Bridge decks, piers, abutments, pier caps and girders
- Parking decks, columns and beams
- Piers, wharves, piles, pile caps and beams
- Apartment and condominium balconies
- Highly corrosive environments such as breweries, pulp and paper and industrial facilities
- Swimming pools and concrete tanks

Key Benefits

Proven Technology

ICCP and alkali-activated galvanic anode technologies fused together into a single unit.

Simple Installation

Galvashield® Fusion® T2 anodes provide ICCP and galvanic protection with no external power requirements.

Fit & Forget

Galvashield® Fusion® T2 operates automatically once installed reducing access requirements, installation time and cost.

Long Lasting

Provides corrosion protection for 30+ years without the need for maintenance.*

Measurable Performance

While not critical for the long-term operation of the system, site performance can be measured and validated if required.

Economical

Up to 40% reduction in installed cost when compared to other embedded galvanic systems.

**As with all galvanic protection systems, service life is dependent upon a number of factors including reinforcing steel density, concrete conductivity, chloride concentration, humidity, temperature, and anode spacing.*

Extending the Service Life of Concrete Structures

Corpus Christi, United States

Port of Corpus Christi

2021 ICRI Award of Excellence

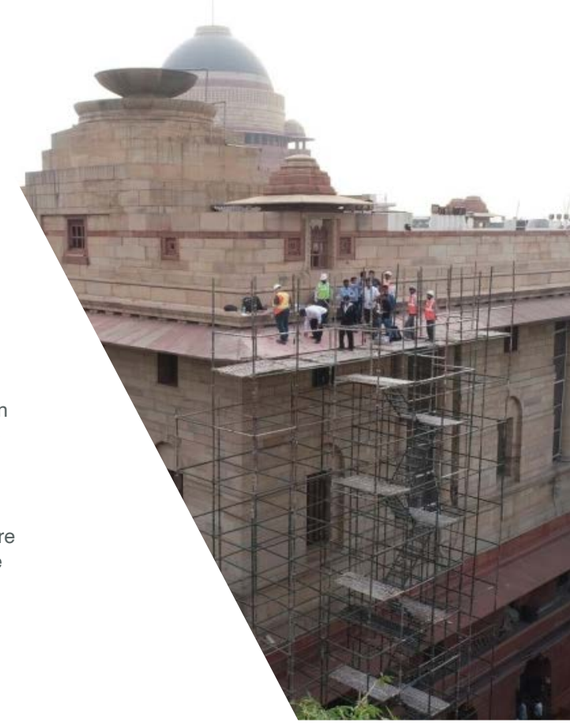
Over a period of 6 months, 3,000 Galvashield® Fusion® T2 anodes were installed into beams and columns to extend the service life of Oil Docks 4 and 7 at the Port of Corpus Christi, Texas. The value engineered CP system saved the Port approximately $1.6 million in overall project cost, maintained the proposed completion schedule, and extended the service life of the Oil Docks for 30+ years.

Galvashield®
FUSION®
T2 Anode

New Delhi, India

Rashtrapati Bhavan Presidential Palace

Galvashield® Fusion® T2 anodes were installed to mitigate active corrosion in the existing Chajja and to provide corrosion prevention in the new concrete where the Chajja was replaced. The Fusion anode system will hold back future corrosion with an intense burst of self-generated impressed current that strikes the reinforcing steel and passivates rebar corrosion. This process will reduce future concrete delamination and spalling to a minimum. The set-it and forget-it nature of the Fusion system will reduce the need for extensive maintenance while significantly extending the service life of the structure.



Genoa, Italy

Genoa Aquarium

2021 ICRI Project of the Year Finalist

The Genoa Aquarium, a major tourist attraction in Italy, was suffering from chloride-induced corrosion after 30 years in service. The existing coating system failed to prevent the intrusion of corrosive chlorides from the saltwater which initiated corrosion of the reinforcing steel in the shark tanks. A suite of corrosion protection products were used including Type 1 & 2 galvanic anodes, distributed galvanic anodes, and our Galvashield® Fusion® T2 two-stage, anode systems. Each was chosen based on the amount of concrete damage and the level of corrosivity in the three Genoa Aquarium tanks.

VECTOR CORROSION TECHNOLOGIES

Technology Development

At Vector Corrosion Technologies, concrete preservation is what we do. With the most extensive range of cathodic protection technologies and services to control corrosion in concrete structures, Vector offers an innovative solution for almost every performance and service life objective.

- Galvanic Systems
- Impressed Current Systems
- Fusion® Technology Systems
- Electrochemical Treatments (Re-alkalization and Chloride Extraction)
- Post-Tensioned Corrosion Protection Systems

Scan for more information on our Galvashield® Fusion Systems

Partnership

Vector works collaboratively with major engineering consultants, government agencies, private owners and contractors to identify the root cause of deterioration and deliver technically advanced, cost-effective corrosion solutions. Our team of cathodic protection engineers and technicians are certified and well-versed in the latest techniques for concrete restoration and corrosion mitigation.

Trust in Vector

Vector's cathodic protection technologies are available directly from Vector and globally through more than 30 international distributors, strategically located in major markets. To obtain an updated list of international distributors, contact Vector or visit our website.

Vector Corrosion Technologies

Vector-Corrosion.com

Canada
Winnipeg, MB
(204) 489-9611
info@vector-corrosion.com

United States
Lexington, KY
(813) 830-7566
info@vector-corrosion.com

Indonesia
Nusa Tenggara Barat
+62 8213 7777798
info@vector-corrosion.com

United Kingdom
Cradley Heath, UK
(44) 1384 671 400
infoeu@vector-corrosion.com

United Arab Emirates
Dubai, UAE
+971 50 659 7322
infome@vector-corrosion.com

Australia
Redhead, NSW
+61 497 249 868
infoau@vector-corrosion.com

Contact Us