

Vector®

Galvanode® DAS

Distributed Anode System for Corrosion Control and Cathodic Protection

Description

Galvanode DAS is a distributed anode system designed to provide corrosion control or cathodic protection to concrete decks, columns, beams and walls. Galvanode DAS anode units are distributed over concrete and masonry structures to provide global corrosion protection.

The quantity of zinc provided, the anode shape, electrical components and installation procedures are customized to meet specific project requirements. Individual Galvanode DAS anode units are typically square, rectangular, oval or circular in cross section and can be supplied in lengths of up to 6.5 ft (2.0 m). The system is quickly and easily installed to provide corrosion protection for a variety of applications. The system can be encased in new concrete, embedded in concrete overlays, encapsulated inside reinforced concrete jackets or used in conjunction with stay-in-place forms for column protection.

Applications

- Bridges, piers and wharves
- Power and industrial plant rehabilitation
- Concrete jacketing/section enlargement
- Galvanic jackets for columns
- Galvanic deck overlays
- Service life extension in severe service conditions
- Conventionally reinforced and prestressed/post-tensioned concrete

Features and Benefits

- **Proven technology** - supported by independent test program.
- **High capacity** - can provide more zinc and more current output than other galvanic anode systems.
- **Design flexibility** - anode design and spacing can be customized to meet project performance requirements and service life objectives.
- **Versatile** - can be used for both conventionally reinforced and prestressed or post-tensioned concrete.
- **User friendly** - installation is quick and easy, requiring no specialized equipment.
- **Low maintenance** - requires no external power source or system monitoring.
- **Measurable** - system performance can be easily monitored if required.
- **Embedded system** - provides more uniform performance, eliminates risk of vandalism.
- **Long lasting** - 10 to 40 year service life* reduces the need for future repairs.

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



Galvanic anode system on bridge pier prior to concrete placement

Level of Protection	Description	Galvanode DAS
Corrosion Prevention	Preventing new corrosion activity from initiating	•
Corrosion Control	Significantly reducing active corrosion	•
Cathodic Protection	Stopping active corrosion by applying on-going electrical current	•
Corrosion Passivation	Stopping active corrosion by changing the concrete environment around the steel	



Galvanic anode system on bridge deck prior placement of reinforced concrete overlay



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Specification

Galvanic protection shall be provided using Galvanode DAS anode units as manufactured by Vector Corrosion Technologies. The distributed galvanic anode units shall be alkali-activated with a pH greater than 14 and contain zinc evenly distributed along the length of the unit. Zinc shall be in compliance with ASTM B418 Type II. The zinc shall be formed around a steel core which is continuous along the length of the unit. The anode unit shall include FRP reinforcing to resist expansion, and shall not contain intentionally added constituents that are corrosive to reinforcing steel as per ACI 222R such as chlorides, bromides, or other halides. Unless otherwise specified, the anode unit shall be supplied with a pair of integral heat-treated, uncoated steel tie wires with loop ties to make connections to the reinforcing steel.

How It Works

When two dissimilar metals are coupled together in an electrolyte, the metal with the higher potential for corrosion (more electronegative) will corrode in preference to the more noble metal. In concrete applications, the Galvanode DAS zinc anode unit corrodes in favor of the reinforcing steel and produces an electrical current that mitigates corrosion activity.

Design Criteria

Galvanode DAS distributed anode system can be used for corrosion prevention, corrosion control or cathodic protection applications. Anode unit design and spacing are varied to meet project objectives. Anode spacing can vary from 6 in. (150 mm) to 30 in. (750 mm) on center depending upon project objectives, the severity of the service environment and expected service life of the anode components. For assistance with system design, please contact Vector Corrosion Technologies.

Typical Anode Unit Sizes*		
Anode Size	Zinc Weight	
	lb./ft.	kg/m
Small	0.25	0.37
Medium	0.60	0.89
Large	1.20	1.80

* Galvanode DAS anode unit size and lengths are customized to meet project requirements. Typical anode weights are listed above.

Installation Instructions

Galvanode DAS distributed anode systems are used for a wide range of applications. Specific application procedures can be developed on a project-by-project basis. For additional information, please contact Vector Corrosion Technologies.

Precautions

Galvanode DAS distributed anode system is not intended to address or repair structural damage. Where structural damage exists, consult a structural engineer. Do not allow Galvanode DAS anode units to be soaked prior to installation. For optimum performance, encasement concrete resistivity should be less than 15,000 ohm-cm. Concrete with significant amounts of polymer or silica fume may have higher resistivity. For applications where wetting will occur such as in tidal zone protection, use Galvanode DAS Marine anode units.

Packaging

Galvanode DAS Distributed Anode System	Custom-packaged based on project requirements. For additional information, contact Vector Corrosion Technologies.
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Storage

Store in dry conditions in the original unopened containers for up to one year from date of manufacture. System should be installed within one month of opening container. Take special precaution not to damage anode components during transportation or while handling. Avoid extremes of temperature and humidity.

Health and Safety

Contact with moisture can release alkalis which may be harmful to exposed skin. Anode components should be handled with suitable gloves and other personal protective equipment in accordance with standard procedures for handling cement and other alkaline materials. Additional safety information is included in the Material Safety Data Sheet.

Related Documents

A range of related documents are available including installation instructions, guideline specifications, project histories, applications, and MSDS. For more information, contact Vector Corrosion Technologies.

About Vector

Vector Corrosion Technologies takes pride in offering technically advanced, cost effective corrosion protection solutions to extend the service life and improve the durability of concrete and masonry structures around the world. Vector has earned numerous project awards and patents for product innovation and is committed to a safe, healthy and sustainable environment. For additional information or technical support, please contact any Vector office or our extensive network of international distributors.