YUXI
CORROSION CONTROL

EMBEDDED GALVANIC ANODES

PRODUCT DATA SHEET

AMPP CORPORATE MEMBER

www.yuxi-anode.com

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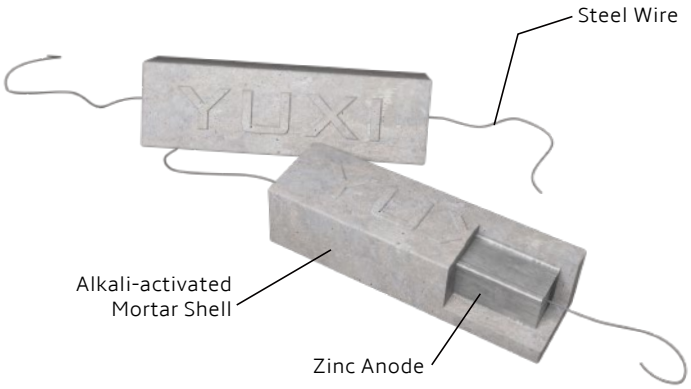
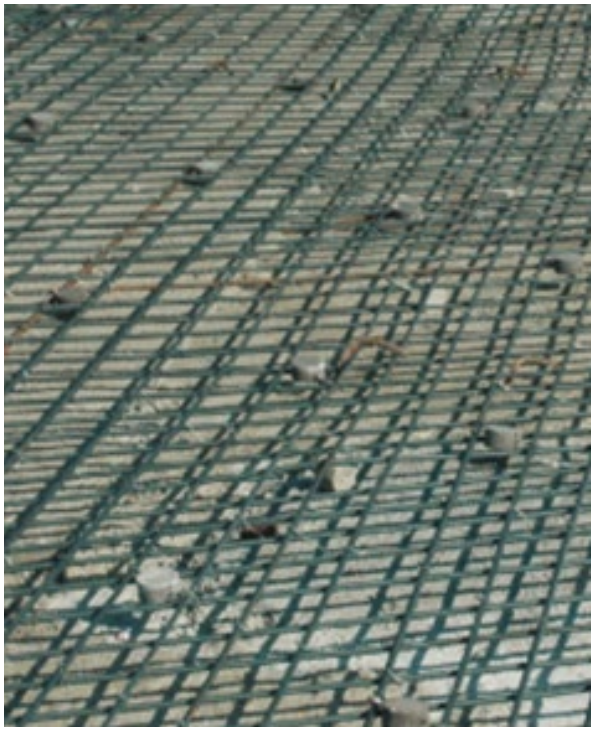
Embedded Galvanic Anodes

This zinc-based discrete anode is encapsulated within a alkali-activated mortar shell.The enhanced formulated cementitious mortar with an internal pH of 14 or greater keeps the zinc core active over the life of the anode.

It can not only been cast into new concrete construction to protect the reinforcement from further corrosion damage, but also repair the corroded reinforcing steel in concrete patch repairs. Our anode is capable of more than 10 years of protection depending on design and conditions.





CHEMICAL COMPOSITION

Our zinc anode is made from special high grade (SHG) zinc ingots with 99.995% purity. The high-purity composition ensures the anode material is more resistant to passive films.

Element		Content (%)
Aluminum	(Al)	0.005 max.
Lead	(Pb)	0.003 max.
Iron	(Fe)	0.0014 max.
Copper	(Cu)	0.002 max.
Cadmium	(Cd)	0.003 max.
Other Impurities		0.100 max.
Zinc	(Zn)	Remainder

ELECTROCHEMICAL PROPERTIES

Technical Measurement	Performance
Open Circuit Voltage (min.)	-1.10 Volts
Closed Circuit Voltage (min.)	-1.05 Volts
Current Capacity	740 A.h/kg(335 A.h/lbs)
Current Efficiency	90%
Consumption Rate	11.9 kg/A.y(26.2 lbs/A.y)

* The open/closed circuit voltage is with respect to a saturated calomel electrode.

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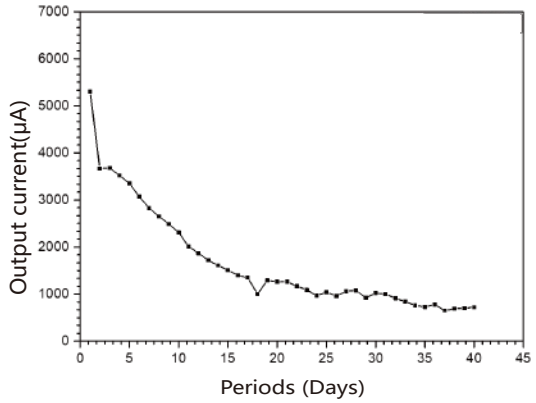
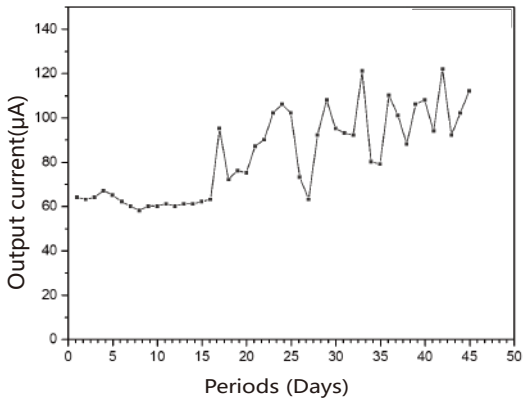
PRACTICAL APPLICATION

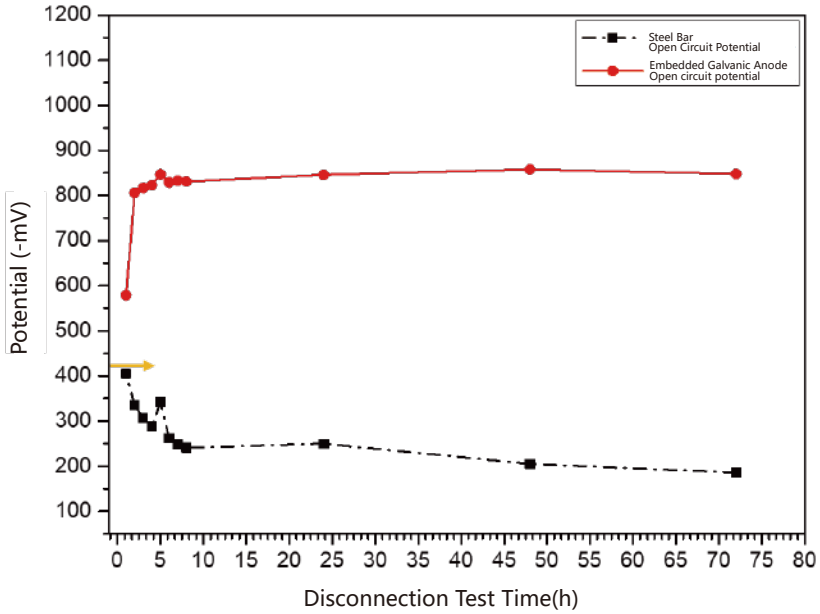
Reinforcement, concrete and embedded galvanic anode are selected for self coupling test. The output current of the anode is monitored during the curing period within 30 days after concrete pouring and after continuous coupling operation for 6 months. The results show that:

- In the early stage of pouring, the output current of the embedded galvanic anode reaches 5000μA, and the steel bar is rapidly polarized. The output current then gradually decreases, finally tending to be stable (720μA), and the steel bar potential is stable at about -420mV.
- After 6 months of coupling, the output current of the embedded galvanic is stable at 60~120μA (fluctuates in a small range due to the influence of temperature and humidity), and the potential of steel bar is stable at about -400mV ~ -440mV.





According to the requirements of NACE SP0290 standard, the corrosion attenuation potential of steel bars should be greater than 200mV. According to this, the open-circuit potentials of steel bars and anodes were continuously measured for multiple time periods, and the results met the standard requirements. After recoupling, the closed circuit potentials of steel bars recovered to -440mV.



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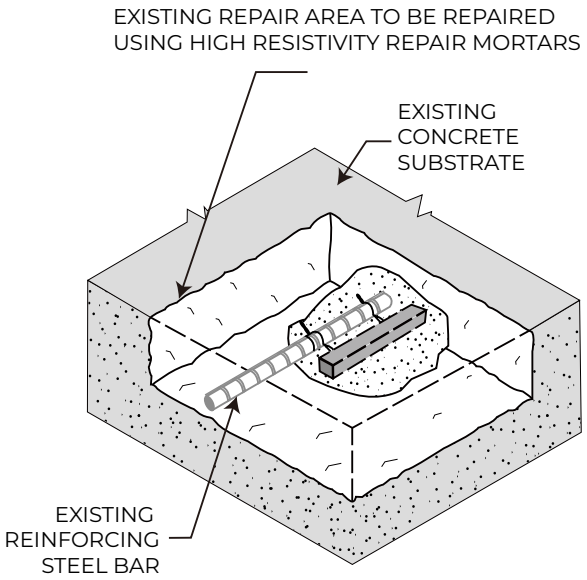
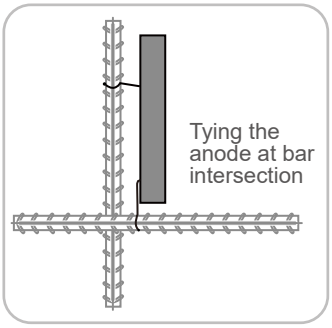
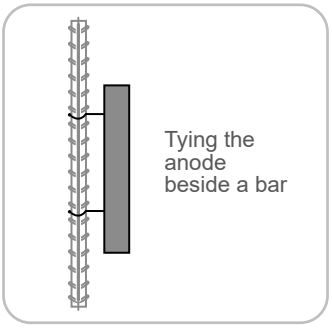
INSTALLATION ILLUSTRATION

The installation spacing of embedded galvanic anode is affected by various factors, including reinforcement area, corrosive environment and temperature. The recommended spacing layout is showed below:







Bar Type

Steel Density Ratio (Steel Surface Area/ Concrete Surface Area)	Maximum Grid Dimensions (mm)
＜0.2	700
0.21-0.46	680
0.47-0.70	610
0.71-0.93	560
0.94-1.15	500
1.16-1.36	480
1.37-1.56	450
1.57-1.75	450
1.75-1.93	430
1.94-2.1	430

Round Type

Steel Density Ratio (Steel Surface Area/ Concrete Surface Area)	Maximum Grid Dimensions (mm)
＜0.2	750
0.21-0.46	700
0.47-0.70	650
0.71-0.93	600
0.94-1.15	550
1.16-1.36	500
1.37-1.56	480
1.57-1.75	480
1.75-1.93	450
1.94-2.1	430

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SPECIFICATIONS

Bar Type

Item No.	Core Weight	Dimensions Size(L x W x H)
YX-EZN-B42	42g (0.09 lbs)	25x30x70 mm (0.98”x1.18”x2.76”)
YX-EZN-B65	65g (0.14 lbs)	25x30x100 mm (0.98”x1.18”x3.94”)
YX-EZN-B90	90g (0.20 lbs)	35x40x100 mm (1.38”x1.57”x3.94”)
YX-EZN-B150	150g (0.33 lbs)	35x40x120 mm (1.38”x1.57”x4.72”)

Round Type

Item No.	Core Weight	Dimensions Size(Dia.x H)
YX-EZN-R42	42g (0.09 lbs)	Φ40×50mm (Φ1.57”x1.97”)
YX-EZN-R65	65g (0.14 lbs)	Φ40×60mm (Φ1.57”x2.36”)
YX-EZN-R90	90g (0.20 lbs)	Φ50×70mm (Φ1.97”x2.76”)
YX-EZN-R150	150g (0.33 lbs)	Φ55×70mm (Φ2.17”x2.76”)

Note: All dimensions and weights shown above are nominal. The information provided is subject to change without notice.

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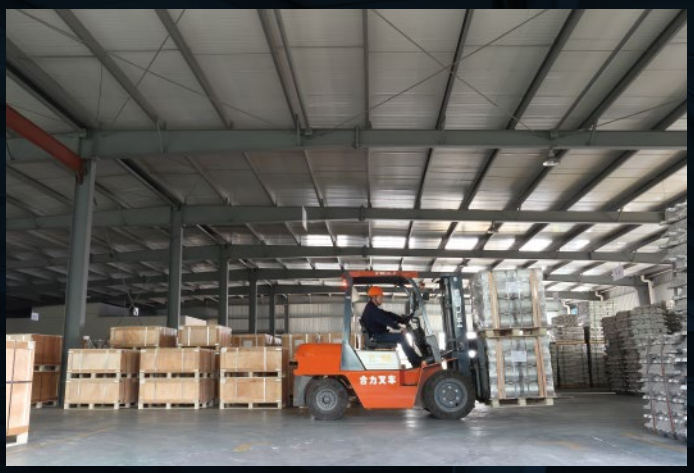

Industrial Corrosion Control Solutions Provider

Established in 2003, YUXI has over a 20-year heritage of innovation in corrosion control science and technology. We're a spirited team of ambitious thinkers and pioneer sheep with a common goal in mind: protect our clients' assets from corrosion with cost-saving measures.

We have the most comprehensive catalog of cathodic protection materials including anodes, transformer rectifiers, backfills, coatings, etc. Our anodes and supplies are manufactured to strict quality standards through an ISO 9001 quality management system and are guaranteed to offer excellent performance in the industry.

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