KATRADIS

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GROUP OF COMPANIES

USER'S MANUAL

NIKA® ANODES

KATRADIS GROUP OF COMPANIES
MANUFACTURER OF SYNTHETIC, HMPE ROPES & SACRIFICIAL ANODES
PROVIDER OF WIRE ROPES, ANCHORS & CHAINS, VESSEL DECK EQUIPMENT, PORT EQUIPMENT
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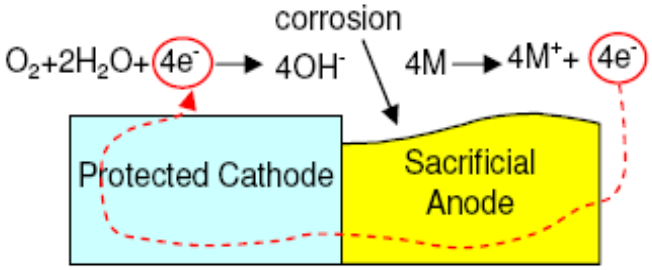
NIKA ANODES User's Manual

1. Introduction to Maritime Anodes

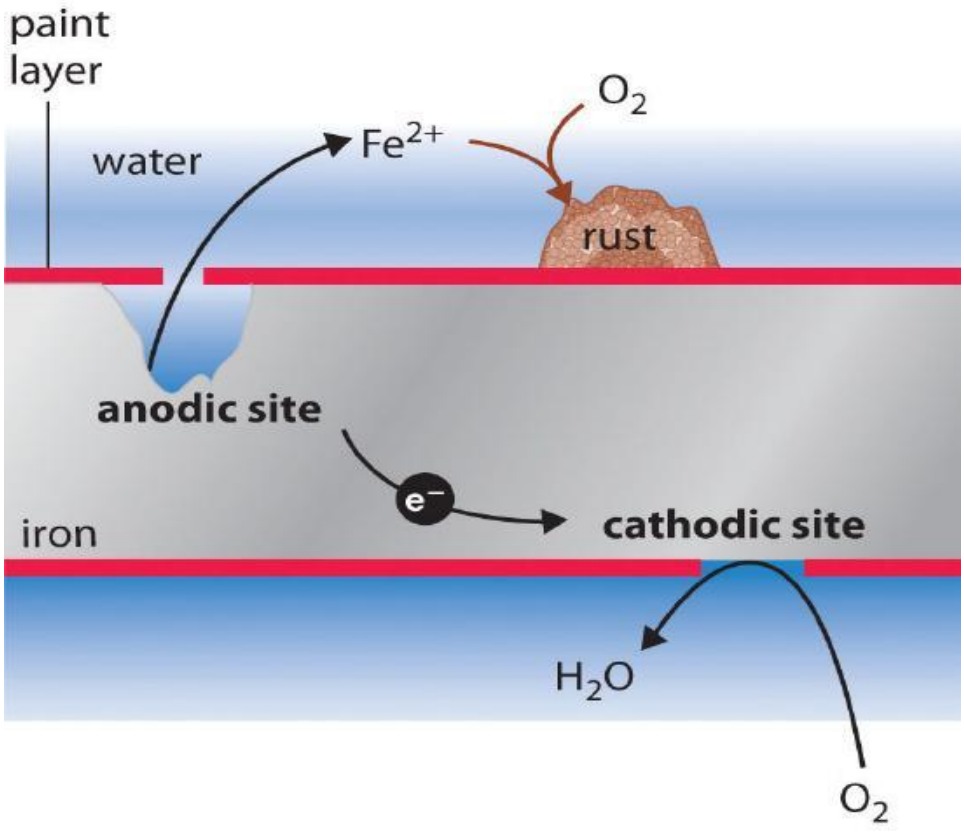
Purpose of Anodes in Corrosion Protection

Maritime anodes serve a crucial role in corrosion protection for vessels and underwater structures. Known as 'sacrificial anodes, they protect metal hulls, propellers, and other components. This method, called cathodic protection, extends the lifespan of marine structures and reduces maintenance costs.



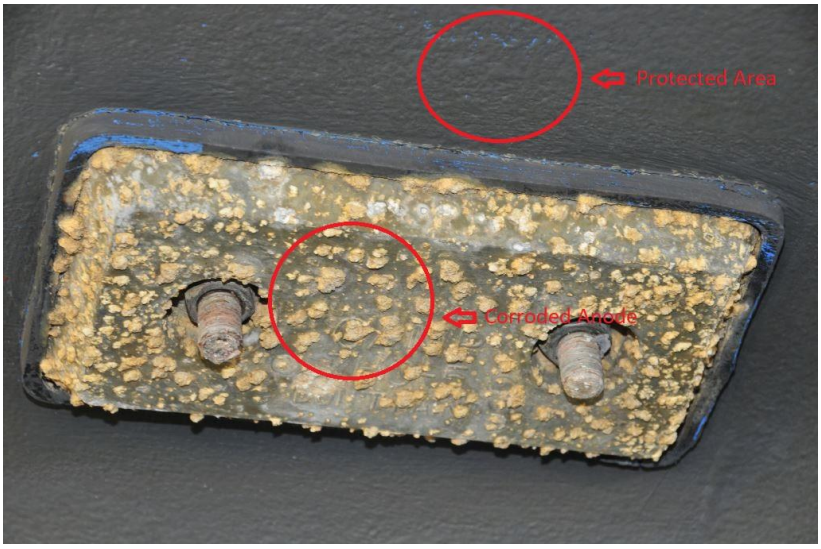
Overview of Cathodic Protection

Cathodic protection occurs when a less noble metal, like an aluminum or zinc anode, is placed near a more noble metal on a vessel. The sacrificial anode corrodes first, preserving the structural integrity of the protected metal. The two primary materials for marine anodes are aluminum and zinc, chosen for their reliable performance in various marine environments.



2. Types of Anodes

Aluminum Anodes



Properties: Lightweight, highly active, and suitable for saltwater. They perform well in a range of temperatures and provide a high current output, making them ideal for marine applications where seawater exposure is high.

Applications: Widely used for larger vessels and saltwater-based installations, such as ships, offshore structures, and yachts.

Advantages: Aluminum anodes have a longer life in seawater and offer more protection per kilogram compared to zinc. They are also environmentally friendly due to their lower toxicity.

Zinc Anodes

Properties: Durable and effective in saltwater as well as brackish waters, where varying salinity could impact other anode types.

Applications: Commonly used for smaller boats, docks, and structures in both saltwater and brackish environments.

Advantages: Zinc anodes offer stable performance in a range of water types, including brackish waters. They are easily available and have established use in marine applications.

3. Selection Criteria

Water Environment: For pure saltwater, aluminum anodes are recommended due to their high efficiency and long-lasting nature. For brackish water, zinc anodes may be preferable due to their stability in varying salinity.

Type of Structure: Larger vessels or structures in high-salinity environments benefit from aluminum anodes. Smaller, brackish-water vessels may perform better with zinc anodes.

Temperature Considerations: Aluminum anodes are more stable in colder temperatures, making them ideal for offshore and northern installations.

Specification Code for Al

Fe	0.15 max
Si	0.05 - 0.20
Zn	3.50 - 5.00
Ti	0.01 - 0.05
In	0.02 - 0.05
Mn	0.15 - 0.50
Cu	0.01 max
Al	REMAINDER

POTENTIAL Ag / AgCl (mV) -1100

ELECTROMECHANICAL CAPACITY

(Amp. Hours / kg) 2700

Specification Code for Zn

Cu	0.005 max
Al	0.10 - 0.50
Fe	0.005 max
Cd	0.025 - 0.07
Pb	0.006 max
Zn	REMAINDER

POTENTIAL Ag / AgCl (mV) -1050

ELECTROMECHANICAL CAPACITY

(Amp. Hours / kg) 780

4. Installation Procedures

Pre-Installation Checks: Ensure the anodes are free from any oils or contaminants. Confirm that the anode and its connections are compatible with the vessel material.

The hull surface must be free of any paint and should be thoroughly cleaned using a grinder. After preparing the surface, the anode should be installed with a perimeter weld to secure it firmly in place. Once the installation is complete, the terminals of the anode should be coated with epoxy paint to ensure durability and resistance.

Mounting Methods and Securement: Fasten the anode securely to the metal surface, ensuring firm contact for effective current flow. Position anodes on the hull, rudder, and other areas needing protection.

Positioning Recommendations: Place anodes where they are least likely to be damaged by impact. Avoid placing them too close to painted surfaces or areas where they could cause localized corrosion.

Figure 1: Wrong

Figure 2: Correct

Figure 3: Wrong

Figure 4: Correct

5. Maintenance and Replacement

Inspection Frequency: Inspect anodes at least annually for wear and deterioration of the protected steel.

Signs of Wear and Corrosion of the anode: Replace anodes when about 50-75% of the material has corroded. Look for any detachment, cracking, or irregular wear patterns.

Replacement Intervals: In high-corrosion environments (e.g., saltwater), replacement may be needed every 1-2 years. In less corrosive environments, intervals may extend to 3-5 years.

6. Safety Precautions

Handling and Storage: Wear gloves when handling anodes, as they can corrode and leave residue. Store anodes in a dry, cool place away from moisture before installation.

Disposal of Used Anodes: Recycle or dispose of used anodes according to local environmental regulations. Avoid discarding them in the ocean or untreated areas.

7. Technical Specifications

Standard Dimensions and Weights: Aluminum Anodes: Available in various sizes, with weights ranging from 0.5 kg to 10 kg, suitable for different vessel sizes. Zinc Anodes: Available in similar dimensions, catering to the needs of smaller craft up to large maritime vessels.

Performance Metrics: Anode efficiency, current output, and expected lifespan under typical saltwater and brackish water conditions.

8. Troubleshooting

Common Issues and Solutions

Issue: Anode is not corroding. Solution: Check for a secure metal contact clean contact points and reattach.

Issue: Rapid wear in low-corrosion areas. Solution: Assess water type and consider anode material compatibility.

Issue: Uneven wear patterns. Solution: Verify placement and spacing from other anodes; adjust as necessary.

9. Glossary of Terms

Cathodic Protection: A technique to control corrosion by making a metal the cathode of an electrochemical cell.

Sacrificial Anode: A metal anode that corrodes to protect another metal surface.

Brackish Water: Water with more salinity than freshwater, but less than seawater, commonly found in estuaries.

Disclaimer

This manual is intended for general guidance and informational purposes only. The use of NIKA ANODES for specific applications should always be determined by a qualified marine engineer or specialist.

Katradis assumes no responsibility or liability for any errors, omissions, or inaccuracies in the information provided in this manual.

The information in this manual is subject to change without notice. Always consult with a certified specialist before installation or use.

Proper handling, installation, and maintenance of anodes are essential for optimal performance. Failure to follow recommended procedures may result in reduced effectiveness of the anodes and potential vessel damage.

Katradis does not assume liability for misuse or incorrect application of NIKA ANODES products.

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