شركة اليكو الصناعية المحدودة
ALICO INDUSTRIES COMPANY LIMITED

www.alicoind.com

CATHODIC PROTECTION PRODUCTS

PRODUCING WORLD CLASS ALUMINIUM SACRIFICIAL ANODES FOR OFFSHORE CATHODIC PROTECTION APPLICATION

JACKET ANODES | PIPELINE BRACELET ANODES | HULL ANODES

OFFSHORE WIND FARM ANODES | MISCELLANEOUS APPLICATION ANODES

Health, Safety & Environmental Requirements

Total commitment of management & workforce to the highest HSE standards

RAW MATERIALS

- High purity Aluminum ingots (99.86% Purity Min.)
- High purity Zinc ingots (99.995% Purity Min.)
- High purity Indium ingots (99.990% Purity Min.)

MELTING PROCESS

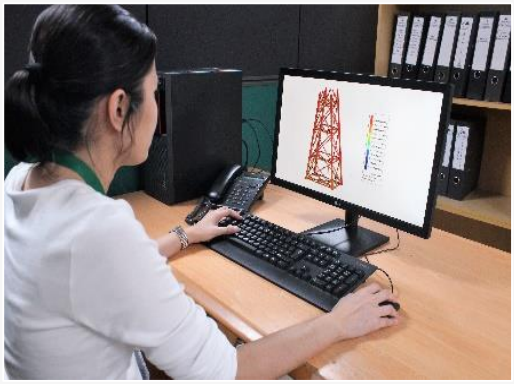
- Production capacity of 40 tons per day Aluminum & Zinc anodes
- High Technology LPG furnaces from Striko Westofen GmbH
- High quality and clean metal
- Temperature control with digital display

TESTING FACILITIES

- Comprehensive equipped computerized chemical laboratory
- Fully equipped electrochemical testing laboratory

DESIGN CAPABILITES

- Design of CP systems for offshore platforms & submarine pipelines
- Fully computerised and experienced drawing office
- Anode distribution drawing software by BEM method



JACKET ANODES

Alico Industries manufacture jacket anodes in trapezoidal or cylindrical cross-section with round solid bar or tubular steel inserts. The anode sizes and insert designs can be fabricated as per customer's requirement.

HULL ANODES

Zinc and Aluminium anodes are used for protection of ship hulls. Hull anodes are usually welded direct to the ship hulls, but it can be bolted if required. The anode size and insert designs can be fabricated as per customer's requirements

PIPELINE BRACELET ANODES

Pipelines bracelet anodes can be either half shell or segmented bracelet anodes. It can be fabricated from 2" to 56" inch diameter pipelines.

Bracelet anodes can be made with square end for flush fitting with concrete coating or with taper ends for easy movements over stringer during pipeline laying. In addition, bracelet anodes can be designed for fitting on pipeline by welding or bolting the anode halves together and then connected to the pipelines by cables or steel continuity bars

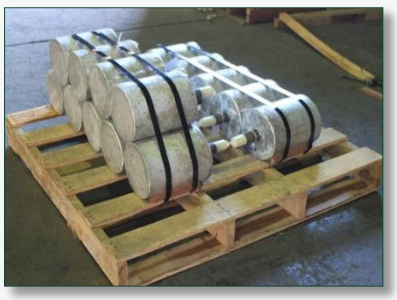
OFFSHORE WIND FARM ANODES

Alico Industries Company Limited has extensive experience in design and supply of sacrificial anodes for cathodic protection of offshore wind farm foundations and substations. Major completed projects are Moray Offshore Windfarm East, Scotland, Seagreen Offshore Wind Farm Project located in the North Sea firth and Formosa II Offshore Wind Farm Project located off the coast of Taiwan.

MISCELLANEOUS APPLICATION ANODES

Miscellaneous anodes are any anodes used for cathodic protection of steel structures in seawater applications. These includes different type of anodes based on installation and application requirements. Retrofit anodes and monitoring system anodes are also included under this category. Alico Industries Company Limited has the manufacturing and technical capability to design and manufacture different shape of anodes including cylindrical and spherical shapes based on client installation and application requirements.

CYLINDRICAL ANODES



RETROFIT ANODES

MONITORING ANODES

SPECIFIC APPLICATION ANODES

Anode Alloy Chemical Composition & Performance Data

Chemical Composition of Aluminum Anodes

Alico Industries aluminum anodes can be manufactured as per Galvalum III (eqv.), DNV, ISO, Alanode Standards or clients specifications

STANDARD CHEMICAL COMPOSITION OF ALUMINUM ANODES			
Standard	**Galvalum III (Eqv.)**	**DNV & ISO**	**Alanode**
Elements	% (By Weight)	% (By Weight)	% (By Weight)
Zn	2.0 - 6.5	2.5 - 5.75	0.50 - 5.00
In	0.01 - 0.02	0.016 - 0.04	0.005 - 0.05
Si	0.08 - 0.20	0.12 Max.	0.10 Max
Fe	0.12 Max.	0.09 Max.	0.13 Max
Cu	0.006 Max	0.003 Max	0.01 Max
Cd		0.002 Max	
Others (each)	0.02 Max.	0.02 Max.	0.02 Max.
Others (Total)	0.06 Max.		
Al	Remainder	Remainder	Remainder

Electrochemical Characteristics of Aluminum Anodes

Alico Industries aluminum anodes can provide complete Cathodic Protection over along design life in the harshest operating environments.

Alico Industries aluminum anodes electrochemical characteristics are listed below.

STANDARD CHEMICAL COMPOSITION OF ALUMINUM ANODES	
Operating Environment	Seawater at 23 °C
Open Circuit Potential w.r.t. Ag/AgCl	More negative than (-1.1v)
Closed Circuit Potential w.r.t. / AgC Reference Electrodel	More negative than (-1.05v)
Anode Capacity (A.hr/Kg)	2550 - 2750

Chemical composition of Zinc Anodes

Alico Industries Zinc anodes can be manufactured as per US Mill Spec, ASTM Standards or clients specifications.

STANDARD CHEMICAL COMPOSITION OF ZINC ANODES		
Standard	**US Mill Spec**	**ASTM B148-II**
Element	% (By Weight)	% (By Weight)
Al	0.10 - 0.50	0.005 Max
Si	0.125 Max.	<
Cd	0.025 - 0.15 Max	0.03 Max.
Fe	0.005 Max.	0.0014 Max.
Pb	0.006 Max.	0.003 Max.
Cu	0.005 Max.	0.002 Max.
Zn	Remainder	Remainder

Electrochemical Characteristics of Zinc Anodes

Alico Industries Zinc anodes can provide complete Cathodic Protection over a long design life in the harshest operating environments.

Alico Industries Zinc anodes electrochemical characteristics are listed below.

GENERAL PERFORMANCE DATA FOR ZINC ANODES	
Operating Environment	Sea Water at 20 °C
Open Circuit Potential w.r.t. Ag/AgCl	More negative than (-1.1v)
Closed Circuit Potential w.r.t. / AgC Reference Electrode	More negative than (-1.05v)
Anode Capacity (A.hr/Kg)	780 Min.

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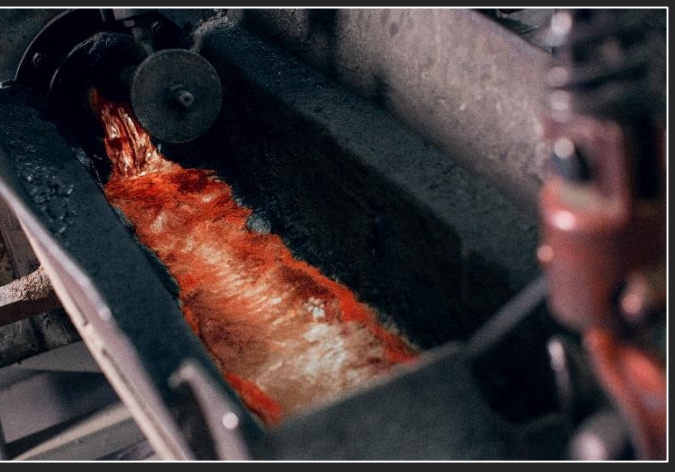

Alico Industries Co. Ltd. is one of the world's main suppliers of Aluminum and Zinc sacrificial anodes for offshore structures, submarine pipelines and ship hulls.

To date, Alico Industries Co. Ltd. has supplied sacrificial anodes in successful service from the Gulf of Mexico, through West & North Africa, Egypt, the Arabian Gulf, the Indian Ocean and the Caspian Sea to the South China Sea.

Alico Industries' factory located in Sharjah is equipped with modern high technology furnaces, steel fabrication workshop for fabrication of dies and inserts, a computerized design-engineering department, chemical analysis laboratory, electrochemical testing facility and highly qualified, trained and experienced work force. With this and the availability and use of high grade aluminium produced by DUBAL only a few miles from Alico Industries premises we are able to produce and guarantee high quality anodes.

Management System is in place conforming to ISO 9001:2015 with total commitment to health, safety and environmental standards.

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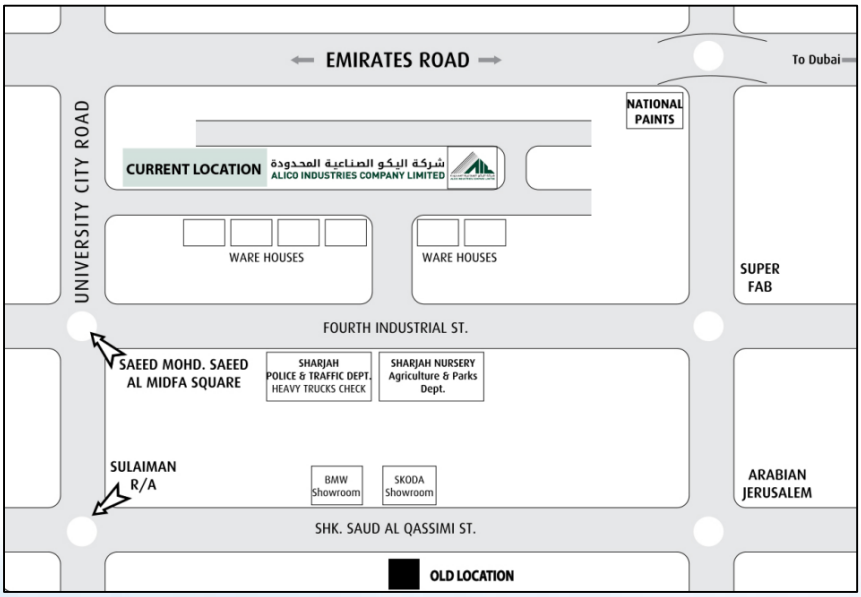

P.O Box 3423, Sharjah, United Arab Emirates

TEL.: +971 (6) 5347777
FAX: +971 (6) 5344455
www.alicoind.com
info@alicoind.com

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