

GO ALL OUT TO BUILD QUALITY SHENGSHIDA

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高强度变形镁合金的研发与生产



焦作盛世达轻合金技术有限公司

JIAOZUO SHENGSHIDA LIGHT ALLOY TECHNOLOGY CO.,LTD

焦作盛世达阴极保护防腐公司

JIAOZUO SHENGSHIDA CATHODIC PROTECTION MATERIALS FACTORY

COMPANY PROFILE

公司简介



焦作盛世达轻合金技术有限公司是一家专业从事变形镁合金半连续铸棒及产品挤压和阴极保护防腐材料的研发、生产、销售、工程技术服务为一体的综合实业公司，是中国港口最大的牺牲阳极供应商，是中交天津港湾研究院、北京有色金属研究院及中交一航、四航局的战略合作伙伴，系中国工业防腐蚀技术协会、学会、中国石油工程协学会、中国镁业协会直属会员单位。

盛世达公司现有员工300余人，其中高、中级技术人员140余人，高级工程师10人，公司占地面积45000平方米，主要生产：镁合金牺牲阳极、铝合金牺牲阳极、锌合金牺牲阳极、镁带、锌带、半连续镁合金棒材、恒电位仪、高纯铸铁阳极、深井阳极、预包装铸铁阳极，贵金属氧化物阳极，MMO阳极、测试桩、参比电极等，数十个系列近百种产品。拥有国内先进的实验室和化验室，具有优良的设备和精密检测仪器。公司已通过ISO9001、ISO14001、GB/T28001(OHSAS18001)质量体系认证，并在2006年取得自营进出口权。公司拥有年产铝、锌、镁牺牲阳极10000吨，高纯铸铁阳极5000吨、镁合金棒5000吨的生产线，盛世达公

Jiaozuo ShengShida Light Alloy Technology Co.,Ltd. is a comprehensive industrial company that is engaged in the R&D, production, sales and engineering and technical services of magnesium alloy semi continuous casting and extrusion products and cathodic protection of anti-corrosion materials, it is the one of most powerful sacrificial anode suppliers of China's port, it is the strategic partner of Tianjin Harbor Research Institute, Beijing Research Institute of Nonferrous Metals and No.1 Civil Aviation Bureau, No.4 Civil Aviation Bureau, and it is the member unit of China Industrial Anticorrosion Technology Protection Association, Institute, China Petroleum Engineering Association, China Magnesium Industry Association.

There are more than 300 employees in the company, including high, intermediate technical personnels of 140 people, senior engineers of 10 people, who have rich experiences and innovation, to provide you with a full range of technical support and good after-sale service. The company covers an area of 45,000 square meters, it mainly produces dozens of nearly a hundred kinds of products: magnesium alloy sacrificial anode, aluminum alloy sacrificial anode, zinc alloy sacrificial anode, magnesium, zinc ribbon, semi continuous

司有二十年的牺牲阳极研发成果和生产业绩，为推动防腐事业的发展和创新不断努力，特别是牺牲阳极和镁合金棒生产技术处于国内领先地位。盛世达千吨国标阴极保护产品供应国内外，取得了显著的经济效益和社会效益。

公司自成立以来，先后与天津一航、四航公司合作参与并生产牺牲阳极：曹妃甸首钢矿石码头（1-3期）牺牲阳极阴极保护工程、港珠澳大桥CB03标段阴极保护工程、湛江港保满集装箱码

magnesium alloy bar, a potentiostat, casting iron anode, deep well anode, pre packaged cast iron anode, precious metal oxide anode, MMO anode, testing pile, reference electrode. It has advanced laboratories, excellent equipments and precision testing instruments. The company has passed ISO9001, ISO14001, GB/T28001 (OHSAS18001) quality system certification, and in 2006 it obtained the right to import and export. The company has the production line with an annual output of aluminum, zinc, magnesium sacrificial anode of 10,000 tons, 5,000 tons of high silicon cast iron anode, 5000 tons of magnesium alloy rod, it has twenty years of R&D and production performance of sacrificial anode, we are making continuous efforts to promote the development and innovation of anticorrosive undertakings. Especially its production technology of the sacrificial anode, magnesium alloy rod is in the domestic leading position. The products of kiloton GB cathodic protection are sold in domestic and abroad, and gained remarkable economic benefits and social

头一期钢管桩阴极保护工程等国家大中型防腐工程，取得了良好的经济效益和社会效益，为国家防腐蚀事业贡献力量。

公司遵循“灵活，创新”的经营理念，“诚信、协作、高效、奋进”是盛世达倡导的企业精神。盛世达公司拥有现代化的管理理念，优良的产品，一流的服务，盛世达公司总经理张峻萍竭诚与国内外各界人士真诚合作共创双赢。

benefits.

Since the establishment, the company has cooperated with Tianjin No. 1 AVIC, No. 4 Aviation Corporation to produce sacrificial anode: we have completed Shougang Caofeidian ore terminal (section 1-3) sacrificial anode cathodic protection engineering, the cathodic protection engineering of the Hong Kong-Zhuhai-Macao Bridge CB03 section, the cathodic protection engineering of Zhanjiang GangBaoman Container Terminal section 1 and other large and medium-sized anti-corrosion engineering, and achieved good economic and social benefits, we have made contribution to anticorrosion cause for the country.

The company follows the business philosophy of "flexible, innovative", the spirit of "honesty, cooperation, efficient, progressive" is advocated by the enterprise. Sheng Shida company has modern management idea, excellent products, excellent service. General manager of Sheng Shida, Zhang Junping will wholeheartedly cooperate with the domestic and foreign friends from all walks of life to create a win-win situation.

THE GENERAL MANAGER SAYINGS 总经理语录

- 没有二等品、要做就要做一等品
- 纸扎的花骗不了蜜蜂
- 诚实做人、认真做事
- 做产品、就是做人品
- 企业的生命在于产品，产品的生命在于质量
- 人无我有，人有我优，人优我新
- 积极的人像太阳，照到哪里，哪里亮；
消极的人像月亮，初一、十五不一样。
- 我们都是太阳，都是盛世阳光，我们是盛世达人！
我们做产品必须实实在在，要经得起历史的、
时间的考验，要经得起市场的检验。





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The high silicon cast iron anodes.

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precious metal oxide deep well anode body

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我们的战略合作伙伴和技术后援

中交天津港湾工程研究院有限公司

中交四航工程研究院有限公司

北京有色金属研究总院

北京科技大学

大连理工大学

上海交通大学

Our partner and technical support

Tianjin Harbor Engineering Research Institute Co., Ltd. of China Communication

Engineering Research Institute Co., Ltd. of No.4 Aviation of China Communication

Beijing General Research Institute of Nonferrous Metals

Beijing University of Science and Technology

Dalian University of Technology

Shanghai Jiao Tong University



BUSINESS CULTURE

企业文化

防腐：力争成为中国阴极保护行业领航军

专业：成为一个受到社会尊敬的阴极保护专家

责任：成为一个有责任感的人，获得社会的尊重

Anti-corrosion: we are striving to become the leading of China's cathodic protection industry.

Professional: to become a respected cathodic protection expert by the society

Responsibility: to be a responsible person, to get the respect of society

EMPLOYEE'S PROFESSIONAL

KNOWLEDGE AND TECHNICAL TRAINING

员工的专业知识与技术培养

公司专门成立了“盛世达防腐商学院”，
承担教育培训工作，
源源不断地为市场输送优秀人才。

The company has established "Sheng Shida Anticorrosion Business College",
To undertake the work of education and training,

Everfount to delivery of excellent talents for the market.

系列课程
Series of courses





中国港口最大的牺牲阳极生产商

QUALIFICATION CERTIFICATE

资质证书





SCIENTIFIC RESEARCH AND DEVELOPMENT 生产与研发



化学分析



电流效率检测



原子吸收光谱仪



金相显微镜



镁合金探伤检测



挤压车间



光谱仪



光谱仪



挤压车间



镁带阳极生产



SEASTAR FIVE CORE STRENGTHS

盛世达五大核心优势

让您买的放心，用的安心

we will win our customer's full trust in our products

强大的研发团队，为客户打造非标产品
一流的专业技术人才和先进的现代化生产设备
规范的管理和专业的生产技术
为需求不同的客户打造合适的非标产品

根据您的要求，为您提供最合适的产品和解决方案
盛世达资深的工程师与您沟通，详细了解您的需求，共同探讨方案可行性；
免费提供最合适您的工程方案、给您提供最满意的产品；
盛世达在港口、煤气管道、电力工程方面，产品服务质量一致得到客户好评。

质量管理体系认证企业，产品性能和质量值得信赖
通过ISO9001 质量管理体系认证企业
全面贯彻质量管理体系要求，生产环节严把质量关
在产品的研发、设计、制造、质量控制及服务协调方面，
始终保持高效运作！

厂家直销、产品完善，价格优惠
厂家直销，能提供给客户最优惠的价格，性价比最高的产品；
规范化的管理加专业的生产技术；
自产自销，减少中间环节，最大让利给客户，真正的让您省钱

完善的售后服务体系，一站式服务，
保证产品质量和服务质量
强大的生产配套能力，以完善的服务体系，
为客户提供保姆式的售后服务；
技术难题2小时内电话回复，河南省24小时现场服务，
外省48小时现场服务的快速响应
盛世达为您免费提供技术培训，解决您的后顾之忧

盛世达自产自销，减少中间环节，服务一站到工程现场，
最大让利给客户，真正的让您省钱，关键是让您合作放心！让您干工程交朋友！



We have strong R & D team to create non-standard products for customers
The first-class professional and technical personnel and advanced modern production equipments
Standardized management and professional production technology
We will build suitable non-standard products for the customers with different needs.

We will provide the most suitable products and solutions for you according to your request.
The senior engineers of Sheng Shida will communicate with you, understand your needs, and discuss the feasibility of the scheme;
We will provide the most suitable project for free, and provide you with the most satisfactory products;
In the port, gas pipelines, power engineering, our products quality and services have been praised by the customers.

It is the quality management system certification enterprise, the product performance and quality is trustworthy.
It has passed through the ISO9001 quality management system certification.
We fully implement the quality management system requirements and strictly control the quality in the production process.
In the aspects of product development, design, manufacturing, quality control and service coordination, we always keep high efficiency operation!

Factory direct sales, product improvement, price concessions
We can provide customers with the most preferential prices, the highest cost-effective products by the means of factory direct sales;
Standardized management and professional production technology;
We reduce intermediate links, give the maximum profit to customers by the means of market one's own products.

Perfect after sale service system, one-stop service,
To ensure the quality of product and service quality
On the basis of strong production matching capacity, perfect service system,
We provide nanny after sale service to customers;
Technical problems within 2 hours of call back, Henan province 24 hours on-site service,
48 hours outside field rapid response services
Sheng Shida will provide free technical training for you to solve your any menace from the "rear".

Basing on marketing one's own products, Sheng Shida company will reduce intermediate links and supply service to the construction site.

We will give the maximum profit to customers, make you money, let you rest assured!



Deformation of semicontinuous
casting of magnesium alloy And extrusion series

变形镁合金半连续铸造 及挤压系列

变形镁合金半连续镁合金棒材、板坯料 Magnesium alloy semicontinuous magnesium alloy rod, slab

产品说明： Product description:

我公司按照ASTM B 93/B 93M生产的变形镁合金半连续镁合金铸棒和方坯，具有精度高，内部无夹杂、无空洞缺陷、成份控制严格等优点，镁合金具有良好的铸造、挤压、切削、焊接以及弯曲加工等性能，被用在交通领域（汽车、摩托车、自行车、高速轨道列车）电子产品领域（电脑、手机、数码相机等）医疗器械领域（轮椅、拐杖、康复健身器材等）以及纺织、印刷机械等领域。

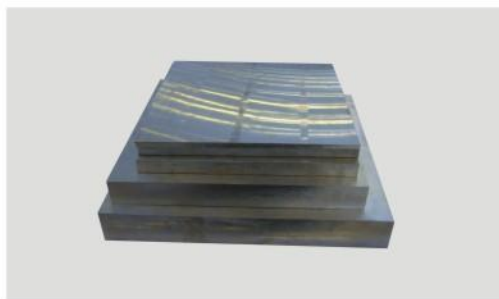
本公司专为变形镁合金提供高精度优质半连续铸造圆坯。

The magnesium alloy semicontinuous magnesium alloy casting bar and billet that are produced by our company in accordance with ASTM B 93/B 93M have the advantages of high precision, no internal inclusions, no voids, components with strict control etc., Magnesium alloy has good properties of casting, extrusion, cutting, welding and bending, that is used in the field of transportation (automobile, motorcycle, bicycle, high-speed train), Electronics (computer, mobile phone, digital camera, etc.), the field of medical apparatus and instruments (wheelchair, crutch, rehabilitation fitness equipments) and textile, printing machinery and other fields.

The company specifically for magnesium alloy with high precision quality semicontinuous casting round billet.

用途： USES:

1. 挤压型材、管材、棒材的圆坯
2. 锻造成各种锻件的圆坯
1. Round billet of extrusion profiles, pipe, bar
2. The round billet that is forged into all kinds of forgings



镁棒

变形镁合金化学成分：

The chemical composition of deformation magnesium alloy:

ASTM B 93/B 93M	AZ31B	AZ31D	AZ61A	AZ80A
Al %	2.50-3.50	2.50-3.50	5.80-7.20	7.80-9.20
Mn %	0.20-1.00	0.20-1.00	0.15-0.50	0.12-0.50
Cu %	0.01max	0.01max	0.05max	0.05max
Fe %	0.005max	0.002max	0.005max	0.005max
Si %	0.10max	0.05max	0.10max	0.10max
Zn %	0.60-1.40	0.60-1.40	0.40-1.50	0.20-0.80
Ni %	0.005max	0.001max	-----	-----
Others each %	0.05max	0.01max	-----	-----
Others total%	0.30max	-----	0.30max	0.30max
Mg	BALANCE	BALANCE	BALANCE	BALANCE

注：在满足ASTM等标准的基本要求下，可以根据特殊需求控制成分与产品规格。

变形镁合金力学性能

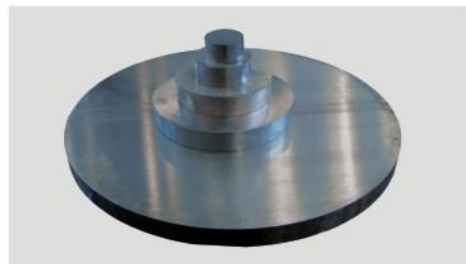
The mechanical properties of deformation magnesium alloys

合金 alloy	力学性能 Mechanical properties			应用 application
ASTM	抗拉强度 (N/MM2) Tensile strength (N/MM2)	屈服强度(N/mm) The yield strength(N/mm)	伸长量 elongation	--
AZ31B	230~290	170~210	10~24	标准挤压合金 Standard extruded alloy
AZ61A	270~390	190~240	9~15	高强度挤压合金 High strength extruded alloys
AZ80A	330~360	230~250	8~10	高强度挤压合金 High strength extruded alloys

常用产品规格

Commonly used specifications

直径/mm Diameter/mm	60	92	112	125	153	165	188	192	195	212	220	320
<p>1.最大长度：可根据客户的不同要求确定棒材产品的长度</p> <p>2.可根据要求设计不同规格的直径。</p> <p>1. The maximum length: according to the different requirements of customers to determine the length of the bar products</p> <p>2. Can design according to the different specifications of the diameter.</p>												



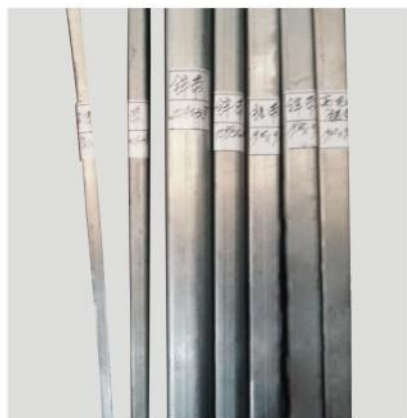
变形镁合金



镁合金探伤



挤压系列产品图示 Extrusion products here



铝、锌带阳极
Aluminum, zinc anode



镁合金型材
Magnesium ribbon anode



挤压镁管材、棒材、型材
Extruded magnesium tubes, rods, profiles

热水器镁阳极 water heater anode

产品说明： Product description:

我公司按照GB/T17731-2009、ASTM B 843-1995生产的水器镁阳极主要用于热水器、换热器、蒸发器、锅炉等设备，有软化水质、排垢除污、延长主机使用寿命等特点。镁合金热水器牺牲阳极，产品分浇铸(AZ63)和挤压(AZ31)两大类，广泛应用于热水器以及锅炉的防腐。

The magnesium alloy sacrificial anode produced by our company according to national standard GB/T17731-2009 "magnesium alloy sacrificial anode" (hereinafter referred to as: magnesium anode) is suitable for the oil, gas, water supply for the anticorrosion protection of underground and fresh water and drainage pipeline, underground cables, chemical industry, communication, harbor, ships, reservoir gate project.

化学成份(%) Chemical composition (%)

类型	Mg	Al	Mn	Zn	Ca	最大Si biggest Si	最大Cu biggest Cu	最大Ni biggest Ni	最大Fe biggest Fe	最大其他杂质(最大) Most other impurities	
										单 single	总量 The total
AZ31B	余量 allowance	2.5-3.5	0.2-1.0	0.6-1.4	0.04	0.10	0.01	0.001	0.005	—	0.30
AZ31D	余量 allowance	2.5-3.5	0.2-1.0	0.6-1.4	0.04	0.05	0.01	0.001	0.002	0.01	0.30
Mg-Mn	余量 allowance	0.01最大	0.5-1.3	—	—	—	0.02	0.001	0.03	0.05	0.30

挤压阳极的尺寸规格 The size of the extruding anode

直径(inch) Diameter(inch)	铁芯偏心率(inch) Core eccentricity(inch)	铁芯直径(inch) Core diameter(inch)	阳极垂直率(inch/ 2 ft length) Anode vertical rate(inch/ 2 ft length)	重量(lbs/inch) weight
挤压镁阳极棒 Extruded magnesium anode rods				
0.675-0.020	0.050	0.135	0.060	0.025
0.750-0.020	1/16	0.135	0.040	0.031
0.800-0.020	1/16	0.135	0.040	0.035
0.840-0.020	1/16	0.135	0.040	0.038
0.900-0.020	1/16	0.135	0.040	0.043
1.050-0.020	1/16	0.135	0.040	0.057
1.315-0.020	1/16	0.135	0.040	0.089

*我公司可以根据客户的要求定做各种规格的挤压阳极棒。

* we can according to customer request custom make all kinds of the anode rod extrusion.



挤压阳极
Squeeze the anode



浇注阳极
Pouring anode

(Az63).浇注阳极规格直径Φ14、16、18、21.3、22、26、28、32、33(mm)等，阳极外露铁芯长度，长度M4、M5、M6和M8为螺丝规格，也可根据客户需求进行生产
(Az63). The diameter of casting anode Φ14, 16, 18, 21.3, 22, 26, 28, 32, 33(mm), anode exposed core length, the length of M4, M5, M6 and M8 is of screws specifications, we can develop new products, which, also according to customer requirements.



The sacrificial anode cathodic protection Series of products 牺牲阳极阴极保护 系列产品

镁合金牺牲阳极 Magnesium alloy sacrificial anode

产品介绍： Product introduction:

我公司按国标 GB/T17731-2009《镁合金牺牲阳极》研发生产的镁合金牺牲阳极（以下简称：镁阳极）适用于地下及淡水中的输油、输气、供排水管线、地下电缆、化工、通讯、港湾、船舶、水库闸门等工程的防腐保护。

Our company according to GB/T17731-2009 research and development of the magnesium alloy sacrificial anode production Magnesium alloy sacrificial anode (hereinafter referred to as: magnesium anode) are suitable for underground and in fresh water Oil, gas, water supply and drainage pipeline, underground cables, chemical industry, communications, harbor, shipping, Reservoir gate and other projects of corrosion protection.

化学成份 Chemical composition

牌号 brand	Chemical composition 化学成份 (%)							
	Alloying elements 合金元素				杂质元素不大于 No greater than the impurity elements			
	Al	Zn	Mn	Mg	Fe	Cu	Ni	Si
MGAZ63B	5.3-6.7	2.5-3.5	0.15-0.6	余量 allowance	0.003	0.01	0.002	0.08
MGAZ31B	2.5-3.5	0.60-1.4	0.20-1.0	余量 allowance	0.003	0.01	0.001	0.08
MGM1C	≤0.01	—	0.5-1.3	余量 allowance	0.01	0.01	0.001	0.05

电化学性能 Electrochemical properties

种类 species	性能 performance 指标 indicators	开路电位-V.Cu/CuSO ₄ The open circuit potential	工作电位-V.Cu/CuSO ₄ Work potential	实际电容量Ah/kg The actual capacitance	电流效率% Current efficiency	溶解状况 soluble 溶解状况
MGAZ63B		1.57-1.67	1.52-1.57	≥1210	≥55	腐蚀产物容易脱落,表面溶解均匀. Dissolve corrosion products easy to fall off, the surface evenly.
MGAZ31B		1.57-1.67	1.47-1.57	≥1210	≥55	
MGM1C		1.77-1.82	1.64-1.69	≥1100	≥50	

该产品具有以下特点： The product has the following features:

- (1) 比重小、电位较负。
- (2) 对铁的驱动电压高，电流效率低。
- (3) 特别适用于高电阻率介质中（对于电阻率大于100.m，建议采用带状镁阳极；在电阻率大于8000.m的土壤中使用高电位镁阳极）。

- (1) The small proportion, negative potential.
- (2) High driving voltage on the iron, low current efficiency.
- (3) It is particularly suitable for the high resistivity (for resistivity is greater than 100.m, we recommend to use magnesium ribbon anode; recommend to use high potential magnesium anode in the soil whose resistivity si of greater than 8000.m).

埋地管线、储罐外壁及地下金属结构常用规格型号
Commonly used specifications for the buried pipeline, the outer wall of the tank and underground metal structure

model 型号	规格(长×宽×高mm) Specification (length x width x height in mm)	镁重kg Heavy magnesium kg
MG-2	350×(72+52)×52	2
MG-4	350×(95+75) ×75	4
MG-8	700×(95+75) ×75	8
MG-11	700×(110+90) ×88	11
MG-14	700×(120+100) ×102	14
MG-22	700×(150+130) ×125	22

备注：其他规格型号可按客户要求生产,重量及外形偏差均在国标范围内。

预包装镁阳极 Pre-packaged magnesium anode

产品介绍 Product introduction

我公司的预包装镁阳极体主要由一只镁阳极和专用热收缩套管、电缆线、棉布袋组成,阳极体周围装上所要求成份的填料。为了简化现场施工程序,方便快捷而开发。

规格型号根据客户要求组装

Pre packaged magnesium anode body of our company is mainly composed of a magnesium anode and special heat shrinkable tube, cable, cotton bags, the anode body is mounted around a required component of filling material. Our company develops it in order to simplify the construction procedure, let the construction to be convenient and quick.

Assembly specifications according to customer requirements



镁合金牺牲阳极



焊线镁合金阳极



预包装镁阳极



镁合金牺牲阳极施工



D型镁阳极

Type D magnesium anode

weight/重量/kg	A/mm	B/mm	C/mm	R/mm	H/mm	I/mm	J/mm	K/mm	L/mm
1.4	70	48	22	29	76	25	19	148	185
2.3	70	48	22	29	76	25	19	254	305
4.1	70	48	22	29	76	25	19	458	549
7.7	89	48	22	38	95	38	29	546	641
10.0	89	48	22	38	95	38	29	646	832
14.5	140	48	22	62	146	38	29	419	505
21.8	140	48	22	62	146	38	29	546	765



D型镁阳极

bracelet type

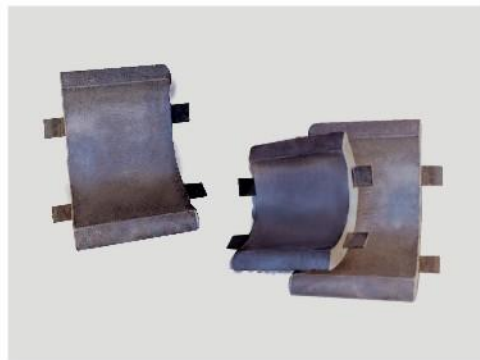


包装后D型镁阳极

镯式镁合金牺牲阳极规格型号

Magnesium alloy sacrificial anode bracelet type specifications

Model 型号	Specifications 规格 Anode spacing long×inside ×diameter thickness (mm) 长×外径×内径×厚度×阳极间距(mm)	Weight 重量
MD-114	260 ×185×115×60	5.5
MD-59	260 ×230×160 ×80	7.0
MD-219	260 ×290×220×115	9.0
MD-273	260 ×344×274×140	11.0
MD-323	260 ×395×325×170	13.0



镯式镁阳极

铝合金牺牲阳极系列

Series of aluminum alloy sacrificial anode

铝合金牺牲阳极

Aluminum alloy sacrificial anode

产品介绍

Product introduction

我公司根据GB/T 4948-2002，U.S.Mil-A-18001K、W标准生产的系列阳极，适用于海水介质中的船舶、机械设备、压载水舱、储罐内壁、滨海设施、海底管道、码头钢桩、海洋平台、电缆等设施金属防腐的阴极保护。

The series of anode produced by our company according to GB/T 4948-2002, U.S.Mil-A-18001K, W standards is suitable for cathodic protection of ships, machineries and equipments, water ballast tank, storage tank, coastal facilities, pipeline, steel pier pile, offshore platform, cables and other facilities for metal anticorrosion in seawater.

铝阳极化学成份

Aluminum anode chemical composition

种类 species	Zn	In	Cd	Sn	Mg	Si	Ti	杂质，不大于 Impurities, no greater than			Al
								Si	Fe	Cu	
Al-Zn-In-Cd	2.5-4.5	0.018-0.050	0.005-0.02	—	—	—	—	0.10	0.15	0.01	余量 allowance
Al-Zn-In-Sn	2.2-5.2	0.020-0.045	—	0.018-0.035	—	—	—	0.10	0.15	0.01	余量 allowance
Al-Zn-In-Si	5.5-7.0	0.025-0.035	—	—	—	0.10-0.15	—	0.10	0.15	0.01	余量 allowance
Al-Zn-In-Sn-Mg	2.5-4.0	0.020-0.050	—	0.025-0.075	0.50-1.00	—	—	0.10	0.15	0.01	余量 allowance
Al-Zn-In-Mg-Ti	4.0-7.0	0.020-0.050	—	—	0.50-1.50	—	0.01-0.08	0.10	0.15	0.01	余量 allowance

铝阳极电化学性能

Aluminum anode electrochemical performance

performance species indicators 性能 种类 指标	The open circuit potential 开路电位-V(SCE)	Work potential 工作电位-V(SCE)	actual capacitance 实际电容量 A·h/kg	Current efficiency 电流效率%	soluble 溶解状况
普通铝合金阳极 Ordinary aluminum alloy anode	1.10-1.18	1.05-1.12	≥2400	≥85	腐蚀产物容易脱落， 表面溶解均匀。
高效铝合金阳极 Efficient aluminum alloy anode	1.10-1.18	1.05-1.12	≥2600	≥90	Dissolve corrosion products easy to fall off, the surface evenly.
高活化铝合金阳极 High activated aluminum alloy anode	1.45-1.50	1.40-1.45	≥2080	≥70	



港工设施，海洋工程设施用牺牲阳极

port facilities, sacrificial anode used in ocean engineering facilities

model 型号	specifications/规格/mm $A \times (B_1+B_2) \times C$	weight/重量/ kg
AI-1	2300× (220+240) ×230	310.0
AI-2	1600× (200+210) ×220	190.0
AI-3	1500× (170+200) ×180	130.0
AI-4	900× (150+170) ×160	58.0
AI-5	1500× (148+178) ×170	120.0
AI-6	850× (180+220) ×180	85.0
AI-7	800× (200+280) ×150	80.0
AI-8	700× (160+220) ×180	72.5
AI-9	1250× (115+135) ×130	56.0
AI-10	1000× (115+135) ×130	46.0
AI-11	750× (115+135) ×130	35.0
AI-12	500× (115+135) ×130	23.0



铝合金牺牲阳极



铝合金牺牲阳极

压载水舱用牺牲阳极

water ballast tank with sacrificial anode

model 型号	specifications/规格/mm $A \times (B_1+B_2) \times C$	weight/重量/ kg
AT-1	500× (115+135) ×130	23.0
AT-2	1500× (65+75) ×70	21.5
AT-3	500× (110+130) ×120	20.0
AT-4	1000× (58.5+78.5) ×68	13.2
AT-5	800× (56+74) ×65	10.0
AT-6	1150× (48+54) ×51	9.0
AT-7	250× (80+100) ×85	5.0
AT-8	200× (70+90) ×70	3.0



铝合金牺牲阳极

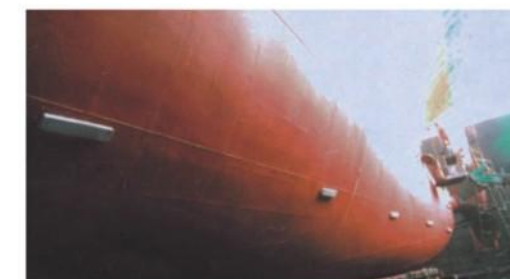


铝合金牺牲阳极

船体常用铝合金牺牲阳极

hull commonly used aluminum alloy sacrificial anode

model 型号	specifications/规格/mm $A \times (B_1+B_2) \times C$	weight/重量/ kg
AH-1	800×140×60	17.0
AH-2	800×140×50	15.0
AH-3	800×140×40	12.0
AH-4	600×120×50	10.0
AH-5	400×120×50	6.5
AH-6	500×100×40	5.5
AH-7	400×100×40	4.5
AH-8	300×100×40	3.5
AH-9	250×100×40	2.5
AH-10	180×70×35	1.2
AH-11	300×150×50双铁脚	5.8
AH-12	300×150×40双铁脚	4.6
AH-13	300×150×50螺栓式	5.8
AH-14	300×150×40螺栓式	4.8



船体牺牲阳极



铝合金牺牲阳极

储管内用牺牲阳极

storage tube with a sacrificial anode

model 型号	specifications/规格/mm $A \times (B_1+B_2) \times C$	weight/重量/ kg
AC-1	750× (115+135) ×130	35.0
AC-2	500× (115+135) ×130	23.0
AC-3	500× (105+135) ×100	16.0
AC-4	300× (105+135) ×100	10.0



铝合金牺牲阳极



海水冷却水系统常用牺牲阳极

sacrificial anode commonly used for salt water cooling system

model 型号	specifications/规格/mm A× (B1+B2) ×C	weight/重量/ kg
AE-1	1200× (200+280) ×150	120.0
AE-2	800× (200+280) ×150	80.0
AE-3	1000× (115+135) ×130	46.0
AE-4	500× (115+135) ×130	23.0
AE-5	1000× (80+100) ×80	20.0
AE-6	500× (105+135) ×100	16.0
AE-7	500× (80+100) ×80	10.0
AE-8	400× (110+120) ×50	7.0
AE-9	300× (140+160) ×40	5.0
AE-10	200× (90+110) ×40	3.0
AE-11	300×50 圆盘状	11.5
AE-12	360×40 圆盘状	9.0
AE-13	300×40 圆盘状	7.5
AE-14	200×50 圆盘状	4.0
AE-15	180×50 圆盘状	3.5
AE-16	120×100 圆盘状	2.5



铝合金牺牲阳极



铝合金牺牲阳极

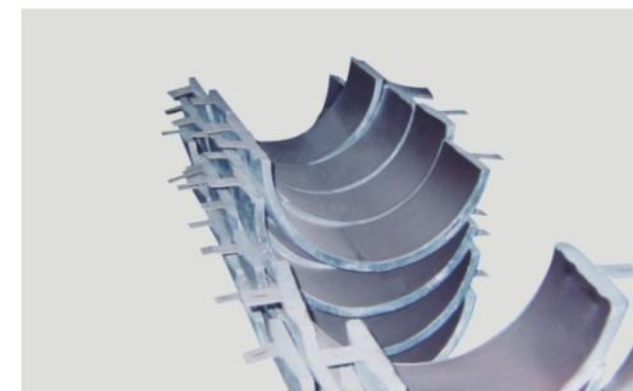


铝阳极施工码头

常用镯式铝合金牺牲阳极

Bracelet type aluminum alloy sacrificial anode with commonly used

specifications/规格 diameter/内径×width/宽度×thickness/ 厚度×clearance/间隙 mm	weight/重量 Kg/pair	铁芯规格 mm Core specification
Φ1020×200×35×51	68	5×50
Φ819×60×30×51	13	5×25
Φ624×80×30×51	17	5×50
Φ513×100×30×51	17	5×50
Φ487×200×45×51	41	5×50
Φ470×480×25×51	50	5×50
Φ436×480×38×51	70	5×50
Φ420×413×45×51	69	5×50
Φ385×150×59×51	32	5×50
Φ335×505×38×51	56	5×50
Φ280×250×45×51	29	5×50
Φ252×250×45×51	26	5×50



镯式铝合金牺牲阳极



镯式阳极安装



锌合金牺牲阳极系列 Zinc alloy sacrificial anode series

产品介绍 Product introduction

我公司按照GB/T4950-2002标准生产的锌-铝-镉合金牺牲阳极，适用于海水、淡水介质中的船舶、机械设备、海洋工程和海港设施以及低电阻率土壤中的管道、电缆等设施金属防腐的阴极保护。

The Zn Al Cd alloy sacrificial anode produced by our company in accordance with GB/T4950-2002 standards is suitable for metals anticorrosion protection of shipbuilding, machinery and equipment, marine engineering and port facilities in sea water, desalination of seawater medium and pipelines, cables in the low resistivity soil and other facilities.

该产品具有以下特点

1. 阳极自溶性小，电流效率高，阳极发生电流的自调节性能好。
2. 保护年限较长，可达20-30年，一般不会发生“过保护”现象。

The products have the following characteristics

1. The anode has the advantages of small autolysis, high current efficiency and anode current has excellent self regulation performance.
2. The protection period is longer, can be up to 20-30 years, generally there is no phenomenon of "over protection".

化学成份 Chemical composition

杂质、不大于 Impurity, not greater than							
化学元素 chemical elements	Al	Cd	Fe	Cu	Pb	Si	Zn
含量%	0.3-0.6	0.05-0.12	0.005	0.005	0.006	0.125	余量



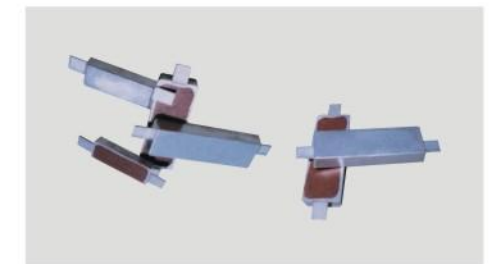
锌合金牺牲阳极

电化学性能 electrochemical performance

performance species indicators 性能 种类 指标	The open circuit potential 开路电位-V(SCE)	Work potential 工作电位-V(SCE)	actual capacitance 实际电容量 A·h/kg	Current efficiency 电流效率%	soluble 溶解状况
海水中 In the seawater	-1.09~-1.05	-1.05~-1.00	≥780	≥95	腐蚀产物容易脱落， 表面溶解均匀。 The corrosion product is easy to fall off, and the surface dissolved uniformly
土壤中 In the soil	≤-1.05	≤-1.03	≥530	≥65	

船体常用锌合金牺牲阳极型号规格 Hull zinc alloy sacrificial anode specifications

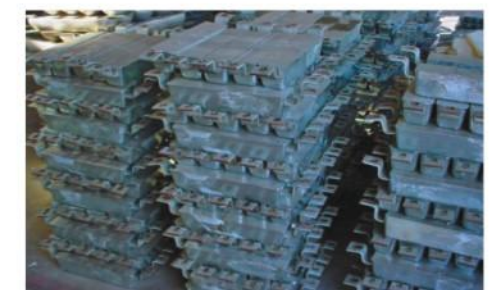
model 型号	specifications/规格/mm A×(B1+B2)×C	weight/重量/kg
ZH-1	800×140×60	47.0
ZH-2	800×140×50	39.0
ZH-3	800×140×40	31.0
ZH-4	600×120×50	25.0
ZH-5	400×120×50	16.0
ZH-6	500×100×40	13.6
ZH-7	400×100×40	11.0
ZH-8	300×100×40	7.5
ZH-9	250×100×40	6.5
ZH-10	180×70×40	3.5
ZH-11	300×150×50 双铁脚	14.5
ZH-12	300×150×40 双铁脚	11.5
ZH-13	300×150×50 螺栓式	12.0
ZH-14	300×150×40 螺栓式	9.0



锌合金牺牲阳极



锌合金牺牲阳极



锌合金牺牲阳极

储罐内防蚀用牺牲阳极 Anti-corrosion sacrificial anode used for storage Tanks

model 型号	specifications/规格/mm A×(B1+B2)×C	weight/重量/kg
ZC-1	750×(115+135)×130	85.0
ZC-2	500×(115+135)×130	56.0
ZC-3	500×(105+135)×100	40.0
ZC-4	300×(105+135)×100	25.0



锌合金牺牲阳极



压载水舱常用牺牲阳极

Sacrificial anode used for Ballast tank

model 型号	specifications/规格/mm A×(B1+B2)×C	weight/重量/kg
ZT-1	500×(115+135)×130	56.0
ZT-2	1500×(65+75)×70	50.0
ZT-3	500×(110+130)×120	50.0
ZT-4	1000×(58.5+78.5)×68	33.0
ZT-5	800×(56+74)×65	25.0
ZT-6	1150×(48+54)×51	20.0
ZT-7	250×(80+100)×85	13.0
ZT-8	200×(70+90)×70	7.5

海水冷却水系统用长条形牺牲阳极

Seawater cooling water system with elongated sacrificial anode

model 型号	specifications/规格/mm A×(B1+B2)×C	weight/重量/kg
ZE-1	500×(115+135)×130	56.0
ZE-2	1000×(80+100)×80	50.0
ZE-3	500×(105+135)×100	40.0
ZE-4	500×(80+100)×80	25.0
ZE-5	400×(110+120)×50	16.0
ZE-6	300×(140+160)×40	12.5
ZE-7	200×(90+110)×40	5.5
ZE-8	300×60 圆盘状	30.0
ZE-9	360×40 圆盘状	28.5
ZE-10	300×40 圆盘状	20.0
ZE-11	200×50 圆盘状	10.5
ZE-12	180×50 圆盘状	8.5
ZE-13	120×100 圆盘状	7.5

埋地管线用牺牲阳极

Sacrificial anode used for buried pipeline

model 型号	specifications/规格/mm A×(B1+B2)×C	weight/重量/kg
ZP-1	1000×(78+88)×85	50.0
ZP-2	1000×(65+75)×65	33.0
ZP-3	800×(60+80)×65	25.0
ZP-4	800×(55+64)×60	22.0
ZP-5	650×(58+64)×60	18.0
ZP-6	550×(58+64)×60	15.0
ZP-7	600×(52+56)×54	12.5
ZP-8	600×(40+48)×45	9.0



锌合金牺牲阳极

镁带牺牲阳极 Magnesium sacrificial anode

产品介绍

Product introduction

我公司的镁带阳极使用优质高纯镁生产，符合 ASTM B 843-1995 SY/T0019-1997 标准，采用特定的工艺挤压而成，阳极具有极好的电化学性能，带状阳极的形状扁平，长度可以调节，容易弯曲。本产品用于高电阻率环境，套管内管道的保护，管道临时阴极保护、储罐及管网的保护、防强电干扰的接地栅。

Our company's magnesium anode is made of high purity magnesium according to ASTM B 843-1995 SY/T0019-1997 standard, It is extruded with specific technology, the anode have excellent electrochemical performance, ribbon anode has flat shape, the length is adjustable, it is easy to be bent. The product is used for the high resistivity environment, the protection of casing pipe, the pipeline temporary cathodic protection, storage tank and pipeline protection, anti strong electrical interference grounding grid.

化学成分:

Chemical composition

牌号	Al	Zn	Mn	Fe	Ni	Cu	Si	Mg
镁锰	<0.010	—	0.5-1.30	<0.03	<0.001	<0.02	—	余量
纯镁	<0.010	<0.010	<0.030	<0.002	<0.001	<0.001	<0.010	>99.95

规格:

序号	带状阳极规格			铁芯 (mm)	近似重量 (kg/m)	合金类别
	A (mm)	B (mm)	C (m)			
1	19(3/4)	9.5(3/8)	305(1000)	3.4(0.135)	0.395(0.020)	镁锰
2	19(3/4)	9.5(3/8)	305(1000)	3.4(0.135)	0.357(0.020)	纯镁



镁带状牺牲阳极



带状阳极安装



锌带状牺牲阳极

产品介绍

Product introduction

我公司的锌带阳极符合ASTM B 843-1995 SY/T0019-1997 (类型 1/ 类型 2) 标准, 主要用于套管内管道的保护、管道临时阴极保护、储罐及管网的保护、防止强电线路对埋地管道的交流干扰和雷电干扰。不需要外部电源, 带状有连续导电芯, 电连接少.可以做接地极、释放交流、雷电, 保护设备和人身安全。

化学成份(%)

Chemical composition

	铝	镉	铁 (最大)	铅 (最大)	铜 (最大)	锌
I	0.1-0.5	0.02-0.07	0.005	0.006	0.005	余量
II	0.005(最大)	0.003(最大)	0.0014	0.003	0.002	余量
高纯锌	0.003(最大)	0.002(最大)	0.001	0.003	0.001	余量

Our company's zinc anode is according with ASTM B 843-1995 SY/T0019-1997 (1/ type 2) standard, it is mainly used for casing pipe protection, the temporary cathodic protection of pipeline, storage tank and pipeline protection, it can prevent AC interference and the lightning interference of the power lines to buried pipeline. It need no external power supply, it is strip shape and has continuous conductive core, and less electrical connection. It can do grounding lightning protection, can guarantee personal and equipment safety.



锌带状牺牲阳极

电化学性能

The electrochemical properties

阳极类型		开路电位 -V(SCE)	闭路电位 -V(SCE)	实际电容量 (A.H/g)	电流效率(%)	表面溶解特征
普通锌带 Ordinary zinc strip	海水中	1.05-1.09	1.0-1.05	≥0.78	≥95	产物易脱落 表面溶解均匀
	土壤中	≤1.05	≤1.03	≥0.53	≥65	
高纯锌 High purity zinc	海水中	≥1.09	≥1.05	≥0.78	≥95	

size/规格尺寸

model型号	A(mm)	size/尺寸(mm) B(mm)	C(m)	Single/单重(g/cm)
特大(A)	25.4	31.75	30.5	35.72
大(B)	15.88	22.23	61	17.82
标准(C)	12.7	14.28	152	8.93
小(D)	8.73	11.91	305	3.72



锌带状牺牲阳极

锌接地电池 Zinc grounding cell

我公司的锌接地电池由平行靠近的一对或四支锌合金牺牲阳极棒组成, 中间用绝缘垫块隔开, 然后一起装在装有填包料的棉布袋中, 通过引出电缆焊接在绝缘装置(绝缘接头或法兰)的两侧, 以防止强电冲击引起的损坏, 同时日常情况下接地电池也可对管道起保护作用。

Our company's pieces Zinc earthing cells is composed by the adjacent one couple or four pieces zinc alloy sacrificial anode rod, they are separated by insulated block,among then packed together in a cloth bag of filling material, the lead cable welding on both sides of insulating device (insulating joint or flange), to prevent damage by electric shock, at the same time grounding cell can also be protective pipeline.

model型号	规格 (长×宽×高 (直径×长) mm Specifications (length x width x height in mm (diameter x length)
ZJD-1	1000×40×40
ZJD-2	1500×40×40
ZJD-3	Φ40×1000
ZJD-4	Φ40×1500
ZJD-5	Φ60×2000

注意事项:

在土壤中使用, 应用填充料, 其配比为: 石膏75%、膨润土20%、硫酸钠5%。



锌接地电池



锌接地电池



Impressed current auxiliary anode series 外加电流 辅助阳极系列

高硅铸铁阳极

产品介绍

我公司的（含铬）高硅铸铁阳极严格按照ASTM A518 BS1591标准和GB8491-87《高硅耐蚀铸件》生产制造的。高硅铸铁阳极管是采用离心工艺铸造而成，壁厚均匀、耐压，在管中央进行电缆连接。高硅铸铁实心棒状阳极是采用传统沙模铸造的，接线电缆联于阳极一端。本产品被广泛应用于海上钻井平台、地下钢质管道、采油联合站、地下电缆、地下储罐等设施的外加电流的阴极保护中。

化学成分

Chemical composition

Product name 品名	chemical elements/化学元素(%)							杂质含量(%)
	Si	Cr	Mn	C	Fe	P	S	
高硅铸铁阳极 High silicon cast iron anodes	14-16	--	0.6-0.8	0.8-1.05	余量	≤ 0.25	≤ 0.1	
含铬高硅铸铁阳极 Chromium high silicon cast iron anodes	14-16	4.0-4.5	0.6-0.8	0.8-1.05	余量	≤ 0.25	≤ 0.1	

Specifications/规格型号	size/尺寸	shape/形状
YGT-1	50*1500	棒状
YGT-2	70*1500	棒状
YGT-3	75*1500	棒状
YGT-4	75*10*1500	管状
YGT-5	100*10*1500	管状

注：订购时请告知所需带电缆的规格、长度和阳极直接的组装连接方式。（常规所带电缆为VV-1KV/1*10mm2）

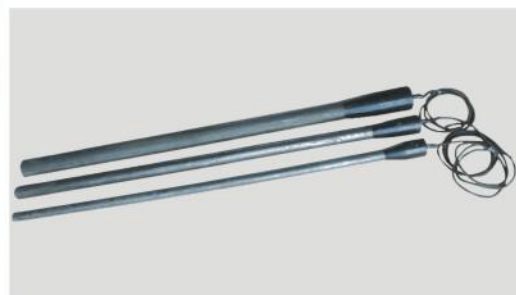
Note: when ordering, please inform the required specifications, length, and the way of anode cable assembly connection directly.

(normal with cable for v. v. 1 kv / 1 * 10 was)

HIGH SILICON CAST IRON ANODES

Product introduction

The high silicon cast iron anode(CR) produced strictly by our company accordance with the ASTM A518 BS1591 standards and GB8491-87 "corrosion resistant high silicon casting manufacturing".High silicon cast iron anode tube is made of centrifugal technology to be casted, it has uniform wall thickness, the cable is connected in the middle of tube. High silicon cast iron solid rod anode is used of traditional sand for casting, wiring cable is connected to the anode end.The products are widely used in the cathodic protection of offshore drilling platforms, underground steel pipelines, oil station, underground cables, underground storage tanks and other facilities.



高硅铸铁阳极



高硅铸铁棒---单头接线阳极



高硅铸铁棒---双头接线阳极



高硅铸铁棒---凹槽式包装

预包装(含铬)高硅铸铁阳极

Pre-packaged (chromium) high silicon cast iron anodes

产品介绍

Product introduction

我公司生产的预包装高硅铸铁阳极。主要由（含铬）高硅铸铁阳极、焦炭填料、导气管和钢套管等组成，然后用支架将高硅铸铁阳极体固定在钢套管的中心，装上导气管后在其四周填充焦炭填料，将原来在施工现场进行的操作在工厂里完成，简化了施工程序，提高工作效率。

Specifications/规格型号	size/尺寸	note/备注
YBSI-50*1	219*2000	内含50*1500的阳极一支
YBSI-75*1	273*2000	内含75*1500的阳极一支
YBSI-50*2	219*4000	内含50*1500的阳极两支
YBSI-75*2	273*4000	内含75*1500的阳极两支

注：其他规格型号可根据客户要求生产。

Note: other specifications according to customer requirements to produce.

The prepacking high silicon cast iron anode produced by our company is mainly composed of high silicon cast iron anode(CR), coke packing, guide tube and steel casing, and then the high silicon cast iron anode body is fixed on the steel casing center by the support, after windpipe is installed and coke fillers is filled in the round, the operation of the original at the construction site is completed in the factory, simplify the construction process, improve work efficiency.



预包装高硅铸铁阳极

贵金属氧化物深井阳极体

Noble metal oxide anode body

产品介绍

Product introduction

我公司生产的预包装贵金属深井阳极是由贵金属管状阳极串、导气管、焦炭填料和钢质套管组成，将阳极串固定在钢质套管中心，装上导气管后阳极串四周填充焦炭填料。其具有使用寿命长、安装方便、接地电阻小等优点。深井阳极根据要求可采用贵金属氧化物阳极、优质高硅铸铁阳极。

Pre packaged noble metal anode produced by our company is composed of a noble metal tubular anode, airway tube, coke packing and steel casing, the anode is fixed on the steel casing center, after the airway is installed the coke filler is filled around the anode.It has the advantages of long service life, convenient installation, low grounding resistance, etc.. Deep well anode can be made of the noble metal oxide anode, high silicon cast iron anode according to requirements.



规格型号
Specifications

model/型号	贵金属氧化物阳极阳极 Precious metal oxide anode anode	size/尺寸	note/备注
SG-1	25*1000	273*6000	内含阳极支3支
SG-2	25*1000	219*6000	内含3支
SG-3	25*1000	219*4000	内含阳极2支

注：其他规格型号可根据客户要求生产。
Note: other specifications produced according to customer requirements.

外加电流阴极保护系列产品- 钛基贵金属氧化物阳极 Impressed current cathodic protection series products

贵金属氧化物网状阳极 Precious metal oxide anodes

产品介绍 Product introduction

我公司生产的贵金属氧化物网状阳极主要用于桥梁、钢筋混凝土等滨海设施的阴极保护,通过低压直流电流向被保护的钢筋结构提供保护电流,从而抑制钢筋腐蚀。网状阳极可对已建成的钢筋混凝土结构中实施阴极保护,也可对新建钢筋混凝土结构从一开始就实施阴极保护。

The noble metal oxide anode produced by our company is mainly used in the cathodic protection of reinforced concrete bridges, such as coastal facilities, it can provide current protection to the steel structure by low-voltage direct current, thereby inhibiting corrosion of reinforcement. The grid anode can provide cathodic protection on the midway to reinforced concrete structure that has been built, and also can provide the cathodic protection on the new reinforced concrete structure from the beginning.

外加电流阴极保护系列产品 Impressed current cathodic protection series products

Specifications 规格型号	size 尺寸 (宽×长) (m)	diamond size 菱形尺寸 (mm)	weight 重量 (KG)
MMOW-1	1.22×76	34×76×0.89mm	33
MMOW-2	1.22×76	25×51×0.89mm	43
MMOW-3	1.14×81	34×76×0.64mm	26

注：其他规格型号可按客户要求生产。
Note: other specifications can be produced according to customer's request.



钛基贵金属氧化物阳极

贵金属氧化物带状阳极 Precious metal oxide ribbon anode

产品介绍 Product introduction

我公司生产的贵金属氧化物阳极是在钛基材 (ASTMB 265一级钛) 上覆盖一层具有电催化活性的金属氧化物 (钌铱钛等金属的氧化物) 而构成, 氧化物涂层极化小并且消耗率极低, 通过调整氧化物层的成分, 可以使其适于不同的环境, 如海水、淡水、土壤介质中, 带状贵金属氧化物阳极和钛导电片交叉焊接组成阳极网, 作为网状阳极阴极保护系统中的辅助阳极在国内外广泛应用新建储罐底板的阴极保护。



贵金属氧化物带状阳极

The noble metal oxide anode produced by our company is covered with a layer of catalytic activity of metal oxides (Ru IR Ti metal oxide) on the titanium substrate (ASTMB 265 titanium of A grade), Oxide coating polarization is small and the consumption rate is extremely low, by adjusting the oxide layer composition, so that it can be adapted to different environments, such as sea water, fresh water, soil medium, noble metal oxide anode and titanium conductive sheet are cross welded to compose anode network, as the auxiliary anode of network cathodic protection system it is widely applied to the new tank bottom at home and abroad.

Specifications/规格型号	size/尺寸 (宽/wide×厚/thick)	note/备注
MMOD	6.35×0.635	一般152.4米每卷

铜芯柔性 (缆型) 阳极 Flexible copper anode (cable)

产品介绍 Product introduction

柔性阳极又称聚合物型电缆阳极, 聚合物电缆阳极是用导电的、性能稳定的改性聚合物制成的, 石墨粉作为导电材料, 铜质电缆芯用作电流导线, 做成电缆状的阳极柔韧性好, 抗机械损伤能力强, 化学稳定性好。电缆外径12.7mm, 内部铜质芯线的截面积11.4mm², 因此单位长度的电阻R'为2mΩ·m⁻¹。

柔性阳极主要用于埋地管道和储罐底部的阴极保护, 其开发主要是解决①覆盖层老化的旧管道 ②错综复杂的管网 ③储罐罐底外壁 ④长距离、小间距平行的管道 ⑤高电阻率环境; 一般柔性阳极有以下几部分组成: 铜芯、导电聚合物阳极材料、焦炭渣、编织物等



铜芯柔性 (缆型) 阳极

Flexible anode is also named polymer type cable anode, cable anode is made of the conductive modified polymer with stable performance, Graphite powder as a conductive material, copper core cable used as a current conductor, anode like cable is made and it has the good flexibility, strong ability against mechanical damage, good chemical stability. Outside diameter of the cable is 12.7mm, cross-sectional area of copper core wire is 11.4mm², so the unit length resistance R' is 2m Ω· m-1. Flexible anode is mainly used for cathodic protection of buried pipeline and the tank bottom, its development is mainly to solve the aging old pipe, the perplexing pipeline, outside wall of tank bottom, the pipe with long distance, small spacing parallel and high resistivity environment; general flexible anode has the following parts: copper conductor, conducting polymer anode materials, coke slag, fabric etc.



安装说明

Installation instructions

柔性阳极铺设类似于电缆，先与管道平行挖一条阳极沟，在沟内填上半焦炭粉，把柔性阳极就为，再覆盖一半焦炭粉，然后用原土（细土，如果是岩石应进行换土）盖实，便可大量回填。

Flexible anode cable laying is similar to the cable, firstly, to dig a anode ditch paralleling with the pipeline, fill half of coke powder in the ditch, then put the anode in it, then covering half of coke powder, and then use the original soil (fine soil, if is the rock should be changing soil) to cover, then can be a lot of backfill.

贵金属氧化物管状阳极

Precious metal oxide tubular anode

产品介绍

Product introduction

我公司生产的贵金属氧化物管状阳极，具有重量轻，导电性能好、性价比高、强耐腐蚀等优点，是目前阴极保护中替代高硅铸铁阳极最有前途的辅助阳极材料。

The noble metal oxide anode tube produced by our company has the advantages of light weight, good electrical conductivity, high ratio of performance to price, anticorrosion etc., it is the most promising auxiliary anode currently in cathodic protection instead of high silicon cast iron anode.



贵金属氧化物管状阳极

规格型号:

Specifications

Product Name/产品名称	Specifications/规格型号	Exhaust flow/排放量 (A)
MMO管状阳极	MMOG-Φ25×1000	8.0
MMO管状阳极	MMOG-Φ25×700	5.0
MMO管状阳极	MMOG-Φ32×1000	10.0
MMO管状阳极	MMOG-Φ50×650	10.0
MMO管状阳极	MMOG-Φ50×800	12.5
MMO管状阳极	MMOG-Φ50×1000	15.0
串型管状阳极	MMOG-n×Φ25×1000	8.0× n
串型管状阳极	MMOG-n×Φ25×700	5.0× n

注：阳极尺寸和规格可根据客户要求定制，也可根据提供的施工现场要求材料 and 环境材料设计制作。

Note: the anode size and specifications can be customized according to customer requirements,It can also make according to the contruction site requirement material and environment design.

MMO柔性阳极

Flexible MMO anode

产品介绍

MMO柔性阳极的主体为涂有混合金属氧化物IO2/氧化钽Ta2O5钛基阳极，阳极的工作寿命和额定电流是由阳极主体所定。阳极主体是由一连续的钛基体组成。钛基体上的涂层是能适应高热环境、晶体结构稳定、具有催化性以及良好导电性能的铱/钽金属氧化物混合物，阳极基体的钛金属是遵照ASTM,ASTM B-265,DIN 3.7035标准认证的一级钛。

MMO主阳极必须为钛基，不得采用铜芯材料。也就是说混合金属氧化物必须涂敷在钛基上而不是涂敷在铜芯材料表面。



MMO柔性阳极

The main MMO flexible anode is coated with mixed metal oxides for IO2/ oxidation of tantalum Ta2O5 titanium based anode, anode service life and current ratings are determined by the anode body.The main anode body is composed of a continuous titanium substrate. Coating on titanium substrate is to adapt to the high temperature environment, crystal structure stability, the iridium / tantalum oxide mixture has catalytic and good conductive properties, anode titanium is made of Grade A titanium in accordance with ASTM, ASTM B-265, DIN 3.7035 standard certification.

MMO main anode must be titanium, copper core materials shall not be used. That is to say a mixed metal oxide should be coating on titanium substrate not be coated on the surface of the copper core material.

阳极主体的技术参数如下：

阳极尺寸（无回填料）	≥0.8mm
阳极重量	0.7Kg/m
阳极设计寿命	25年
阳极在炭回填料中的消耗率	5毫克/安.年
金属氧化物涂层厚度	≥6g/m2
土壤环境下带碳回填料时的最大运行电流密度	<100A/m2
最大电流输出	16mA/尺（ 52.5mA/米 ）
金属氧化物的电阻率（ ohm/cm ）	10-5 ohm.cm
阳极与电缆的接触电阻	≤0.9milli-ohms
阳极电阻	≤0.007 ohm.cm



Cathodic protection power supply equipment series products

阴极保护电源设备 系列产品

我公司提供的阴极保护电源设备遵循国家规范和国家标准法，适用于埋地钢质管道、储罐外底板、码头钢桩、混凝土内钢筋、场站地下等金属构筑物强制电流阴极保护。产品具有如下技术性能：

适合环境条件

- 环境温度：-15℃~+50℃；
- 相对湿度：15%~90%；
- 大气压力：86KPa~106KPa；
- 交流供电电源：单相220±10%V或三相380±10%；频率：50±5%Hz；
- 直流供电电源：87.5%EdN~117.5%EdN，直流供电电源的电感不大于0.75mH。

交流纹波系数

- 1 单相AC220V电源供电，恒电位仪工作于额定状态时，其负载纹波系数小于5%。
- 2 三相AC380V电源供电，恒电位仪工作于额定状态时，其负载纹波系数小于15%。

恒电位控制范围

恒电位控制范围应为0~-3000mv。

输出电压、输出电流范围

- 1 可控硅恒电位仪输出电压的可调范围不窄于2%UdN(V)~100%UdN(V)，输出电流的可调范围不窄于2%IdN(A)~100%IdN(A)。
- 2 高频开关恒电位仪电源输出电压的可调范围不窄于1%UdN(V)~100%UdN(V)，输出电流的可调范围不窄于1%IdN(A)~100%IdN(A)。

The cathodic protection of power equipment provided by our company according to the national standard and the national standard method, it is suitable for the impressed current cathodic protection of buried steel pipeline, tank bottom plate, steel pier pile, reinforcement, station underground metal in concrete structures. The product has the following technical performance:

Suitable environmental conditions

Environment temperature: -15℃~+50℃;
Relative humidity: 15%~90%;
Atmospheric pressure: 86KPa~106KPa;
AC power supply: 220±10%V of single-phase or three-phase of 380±10%; frequency: 50±5%Hz;
DC power supply: 87.5%EdN~117.5%EdN, inductance DC power supply is not more than 0.75mH.

AC ripple coefficient

- 1 single-phase AC220V power supply, when constant potential instrument work is in rated condition, the load ripple coefficient is less than 5%.
- 2 three-phase AC380V power supply, constant potential instrument work is in rated condition, the load ripple coefficient is less than 15%.

Constant potential control range

Constant potential control range should be 0~-3000mv.

The output voltage, output current range

- 1 The output voltage adjustable range of silicon controlled potentiostat is not narrower than 2%UdN(V)~100%UdN(V), the adjustable output current is not narrower than 2%IdN(A)~100%IdN(A).
- 2 The adjustable range of high frequency switch potentiostat power output voltage is not narrower than 1%UdN(V)~100%UdN(V), the adjustable output current is not narrower than 1%IdN(A)~100%IdN(A).

交流恒电位仪的规格

Communication of the specifications of the potentiostat

电源规格 power source specification	额定输出电压 The rated output voltage	额定输出电流 Rated output current
~220V±10% 或三相380V±10% 50Hz	30V 40V 50V	15A、30A、50A、75A 100A、150A

直流恒电位仪的规格

The dc of the specifications of the potentiostat

电源规格（蓄电池标称电压） Power specifications (nominal battery voltage)	额定输出电压 The rated output voltage	额定输出电流 Rated output current
24V±10%	18V、24V、36V	10A
36V±10%	18V、24V、36V、48V	15A
48V±10%	18V、24V、36V、48V、60V	20A

恒电位仪控制精度

≤5mv

参比电极输入端输入阻抗

大于1 MΩ 流经“参比电极”端子的电流不大于3μA。

运行模式

- 手动调节：控制电压，输出电流。
- 自动调节：控制电位，输出电流。

恒电位转换恒电流功能

当由于参比电极断路等原因，恒电位仪无法恒电位运行时，应可自动转换成恒电流工作方式，恒电流精度为±2%。

通断电测试

手动控制通断：通过开关选择，仪器进入通12S，断3S间歇供电测试状态。

远控通断：当输入远控通断信号时，系统切断输出电流（系统进入通或断的间歇测试状态）。

The control precision of potentiostat

≤5mv

The input impedance of the reference electrode

is more than 1 MΩ (the current passing through the terminal of "reference electrode" is less than 3 μA)

Operation mode

Manual control: control voltage, output current.
Automatic control: control potential, output current.

The function of constant potential conversing constant current

For the causes of circuit breaker of the reference electrode, the potentiostat can not operate on constant potential, it should be automatically converted into a constant current mode, the constant current accuracy is ±2%.

The on-off test of the power

The manual on-off control: by being selected by a switch, the instrument will be in the test condition of 12S on, 3S off intermittent power supply. Remote control switch: when the on-off signal is input, the system will cut off the output current (the system will enter into the test status on or off).



盛世达

全国400服务电话：400-688-6761

阴极保护电源设备系列

误差报警功能

当保护电位偏离控制电位30 mV ~ 100 mV时，仪器声光报警。

抗干扰能力

抗持续干扰特性：仪器具有抗交流50Hz、30V持续干扰电压。

绝缘电阻

交流电源输入端子、阴（阳）极、零位接阴对机壳的绝缘电阻不小于10MΩ，直流电源输入端子、阴(阳)极、零位接阴对机壳的绝缘电阻不小于10MΩ；机内电路板、导线焊接点采取喷漆防潮措施。

抗电强度

交流电源输入端子对机壳能承受1500V、50Hz的试验电压，历时1min，不出现飞弧或击穿现象。直流电源输入端子对机壳能承受750V、50Hz的试验电压，历时1min，不出现飞弧或击穿现象。隔离耐压：设备“零位接阴”端子分别与各远传接口的输出端子相互隔离，能承受1500V、50HZ的试验电压，历史1min不出现飞弧或击穿现象。

保护功能

防雷保护

仪器的输入、输出端安装有合适的雷电泄放系统，并符合IEC1024的规定。

当阳极线、管道受到感应雷影响时，阳极、阴极线之间：限幅电压：100-150V，过压通流容量10kA(8/20μS)，漏电流≤20mA；阳极、零位接阴之间：限幅电压：100-150V;过压通流容量10kA(8/20μS);漏电流≤20mA；参比、零位线之间：限幅电压：5V;过压通流容量54A(10/1000μS);漏电流<0.3μA(3V)。

在仪器输出阳极、阴极端（相对接地端）能承受幅度15kV、脉冲宽度25μs、重复周期1~5S、时间1min的

Error alarm function

When the protection potential is deviated control potential of 30 mV ~ 100 mV, the instrument will be on acousto-optic alarm.

Anti interference ability

Anti interference characteristics: the instrument is with the performance of anti AC 50Hz, 30V continuous interference voltage.

Insulation resistance

The AC power input terminal, cathode and anode, the insulation resistance of zero pole connected cathode on casing is no less than 10M, DC power input terminals, cathode and anode, zero pole connected cathode on the casing insulation resistance is no less than 10M; The machine circuit board, wire welding point are taken the painting measures.

Dielectric strength

The AC power input terminal on the casing can withstand the test voltage of 1500V, 50Hz, duration 1min, there is no flashover or breakdown phenomenon.The DC power input terminals on the casing can withstand test voltage of 750V, 50Hz, during 1min, there is no flashover or breakdown phenomenon. Isolation voltage: equipment "zero ground cathode" terminals are respectively and the output terminal of the remote interface of mutual isolation test voltage, it can bear 1500V, 50HZ, during 1min history, there is no flashover or breakdown phenomenon.

Protection function

Lightning protection

A suitable lightning discharge system is installed on the input, output end of the instrument, and complies with the provisions of IEC1024.

When the anode wire and pipe is effected by induced lightning, between the anode and cathode line: limiting voltage: 100-150V, the flow capacity

of overvoltage is 10kA (8/20 μ S), leakage current ≤ 20mA; anodic, cathodic protection station. Limiting voltage: 100-150V; the flow capacity

of overvoltage is 10kA (8/20 μ S); leakage current ≤ 20mA; between the reference, zero line: limiting voltage: 5V; the flow capacity of overvoltage is 54A (10/1000 μ S); leakage current < 0.3 μ A (3V)

In the instrument output anode, cathode (relative to the grounding end) it can withstand the amplitude of 15kV, pulse width of 25 μ s, repeat the cycle time 1 ~ 5S, 1min of simulation of induction thunder.

模拟感应雷的冲击。

过流保护

仪器的交流输入端和直流输出端装有快速熔断器。

当仪器输出电流达到额定值的102%~110%时，延时20s后仪器自动切断输出电流或进入原设定的恒电流值并声光报警。

故障保护

对多路输出设备，当其中一路在工作中出现故障，红色指示灯亮，仪器将自动停止该路输出，并发出报警鸣音，持续2分钟后可自动关机。

数据传输

当仪器需实现远程测控时，提供以下接口。

1 点对点接口：模拟量输入、输出接口为4mA~20mA的标准工业信号。开关量输入、输出接口为电平信号。高电平信号的电压值应在20V~24V之间，低电平信号的电压值应在0V~4V之间。

1.1 输出电压在0~UdN范围内变化，在“电压信号输出”端口上应转换成4mA~20mA的标准工业信号，变换误差不大于1%。

1.2 输出电流在0~IdN范围内变化，在“电流信号输出”端口上转换成4mA~20mA的标准工业信号，变换误差不大于1%。

1.3 保护电位在0mV~-UeN范围内变化，在“电位信号输出”端口上转换成4mA~20mA的电流信号，变换误差不大于1%。

1.4 从“远控给定信号”端口输入4mA~20mA的标准工业信号时，仪器可转换成0~-UeN的控制电位信号，变换误差不大于0.5%。

1.5 远控开、关机信号为脉宽为1s的高电平（DC24V）脉冲信号。

1.6 运行信号为触点信号，仪器工作时，触点导通，反之则断开。

1.7 远控输出通断功能：当“远控通断信号”端口的电

Over current protection

The AC input and DC output end of the instrument is provided with a quick fuse.

When the output current of the instrument reaches 102%~110% of the rated value, after delaying 20s instrument cut output current will automatically enter into the setted constant current value and alarm.

Fault protection

On the multiple output devices, when one line is in failure, the red indicator light is on, the instrument will automatically stop the output, and send out alarm sound, sustained after 2 minutes it will automatically shutdown.

Data transmission

When the instrument is required to realize the remote monitoring and control, the following interface will be provided.

1. Point-to-point interface: analog input, output interface for the standard signal of 4mA~20mA. Switch input, output interface is level signal. High voltage level signal value should be 20V~24V, voltage and low level signal value should be between 0V to 4V.

1.1 The change of output voltage is in the range of 0~UdN, in the end of"voltage signal output", it should be transformed into the standard signal of 4mA~20mA, transform error is less than 1%.

1.2 The output current changes is in the range of 0~IdN, in the end of "current signal output", it is transformed into the standard signal of 4mA~20mA, transform error is less than 1%.

1.3 The protection potential changes is in the range of 0mV~UeN, in the end of "potential output", it is transformed into a current signal of 4mA~20mA, transform error is less than 1%.

1.4 When industry standard signal from 4mA to 20mA is inputted from "the remote given signal input", the instrument can be transformed into control potential signal of 0~UeN, transform error is less than 0.5%.

1.5 The signal of remote control to open, shutdown is the pulse signal with pulse width of 1s for the high level of (DC24V) .

1.6 The operation signal is the contact signal, when the instrument is operating, conduction will be contacted, otherwise it will be disconnected.

1.7 Remote control on-off function: when the voltage signal of"remote control on-off signal end" is switching from low level to high, the instrument should be cut off the output current or enter the on-off state.When the voltage signal of "remote control on-off signal end" is switching from high level to low level, the instrument will resume the output current or enter the normal working state.



压信号由低电平转换为高电平，仪器应切断输出电流或进入通断工作状态。当“远控通断信号”端口的电压信号由高电平转换为低电平，仪器恢复输出电流或进入正常工作状态。

2 RS485接口：采用ModBus或自定义的通讯协议，可实现数据的远传、远程开关机、远控通断等功能。

冷却方式

空冷型：自然通风、强制对流。

油冷型：应符合GB2536的规定。

测量、指示

设备具有显示输出电压、输出电流、保护电位、电源电压等参数，测量精度1.5级，同时采用指示灯显示各个工作状态。可监测交流电源的输入电压，可测量、记录运行仪器的电能消耗。

机壳及涂镀

机壳采用厚度大于1.5 mm的冷轧钢板成形，表面采用静电喷塑防腐处理，机壳防护等级：户外IP55以上，户内IP31以上。

2. RS485 interface: ModBus or custom communication protocol, can realize the functions of remote transmission, remote switching machine, remote control on-off.

Cooling mode

Air cooling type: natural ventilation, forced convection.

Oil cooling type: it shall conform to the provisions of Gb2536.

Measurement, indicator

Device has the parameters of display output voltage, output current, protection potential, the power supply voltage and others, the measurement accuracy is 1.5, at the same time the indicator can display each state. It can monitor the input voltage of AC power supply, can measure, record operation energy consumption of the instrument.

The shell and coating

The casing is made of cold rolled steel plate of thickness greater than 1.5 mm, the surface is used of anti-corrosion treatment of electrostatic spray, shell protection grade: IP55 of outdoor, indoor of IP31 above.



HDV—4D系列直流型恒电位仪
(工作机备用机控制台合为一体)



PS—3E系列多路恒电位仪



HPS—2系列多路高频开关恒电位仪



DJ—2系列变压整流器(户外型)



FPS—1系列防爆恒电位仪(户外型)



Ps—1系列恒电位仪

主要产品型号和外型



PC—1B系列远传远控恒电位仪(工作机备用机控制台合为一体)



HPS—1D系列高频开关恒电位仪
(工作机备用机控制台合为一体)



Cathodic protection test equipment series 阴极保护检测设备系列

概述

测试桩设计为多功能测试桩,用于阴极保护参数的检测,是管道管理维护中必不可少的装置,按测试功能沿线布设。测试桩用于管道电位、电流、绝缘性能的检测,本装置装有6个接线柱,可以根据设计单位的具体要求方便地组成电位、电流、牺牲阳极、绝缘性能测试桩或交叉管道测试桩等。

测试桩由桩体、测试接线板、测试导线和铭牌等几部分组成。

测试桩的分类:

1、按材质分:钢质测试桩、水泥测试桩、。钢质测试桩又分为碳钢测试桩和不锈钢测试桩。

2、按功能分:

- 电位测试桩:主要用于检测保护电位
- 牺牲阳极测试桩:用于连接牺牲阳极,测量牺牲阳极的性能参数

- 电流测试桩:测量管中电流

- 保护效果测试桩:连接测试片。

常用测试桩型号规格

The types and specifications of common testing pile

Model/型号	Specifications/规格 长×直径×壁厚 (长×宽×高) Long x wall thickness x diameter (length x width x height)	Material/材质
CS-1	3000×Φ108×4	碳钢
CS-2	1800×Φ89×3	碳钢
CS-3	1200×120×120	不锈钢
CS-4	1600×120×120	水泥
CS-5	1800×Φ89×4	玻璃钢

Summary

Test pile design for multifunction testing pile, it is used for the detection of cathodic protection parameters, and it is a device for pipeline maintenance in indispensable, according to test functional layout along the line. Test pile for the detection of pipeline potential, current, insulation performance, the device is equipped with 6 terminals, it can easily compose of potential, current, sacrificial anode, insulation performance test pile or cross pipe testing pile, etc.

The test pile is composed by several parts of a pile body, test board, test leads and nameplate.

Classification of the test pile:

1. According to the material: can be classified as steel test piles, test piles of cement, . Steel test piles are divided into carbon steel test piles and stainless steel test piles.

2. According to the function:

- potential test pile: it is mainly used to detect the protection potential

- sacrificial anode test pile: it is used to connect the sacrificial anode, performance parameter measurement of sacrificial anodes

The current test pile: measuring tube current

The protective effect of pile testing: connection test piece.



其他产品有:



JI-2管道绝缘层检漏仪



极化探头



埋地管道外防腐检测仪

参比电极系列

Reference electrode series

常用参比电极型号规格

Commonly used test pile type specification

材料	型号	形状	寿命	适用环境
铜/饱和硫酸铜参比电极	CCT	圆柱状	补充硫酸铜后继续使用	便携式, 用于水及土壤中现场测量
	MCT-1	罐状	>5	用于土壤介质中
	MCT-2	罐状	>10	埋地用长寿命电极
银/氯化银参比电极	CCY-1	圆柱状	>3	粉压型, 用于海水中
	CCY-2	螺旋状 网状	>7	热浸涂型, 用于海水中
	CCY-3	圆柱状	>6	用于海水中
	CCY-4	螺旋状	>6	用于海水中
	CCY-5	网状	>6	用于海水中
	CCY-6	网状	>6	用于海水中
银/卤化银参比电极	CYL	圆片状	>5	粉压型, 用于海水中
	CCX-1	圆柱状	>10	高纯锌, 用于海水, 淡海水中
高纯锌参比电极	CCX-2	圆柱状	>10	锌合金, 用于海水, 淡海水中



便携式硫酸铜参比电极



长效硫酸铜参比电极



便携式银氯化银参比电极



Anticorrosion engineering
supporting series
防腐工程配套
系列



绝缘法兰



铝热焊模具



绝缘支架



补伤片



绝缘接头



铝热焊剂 及点火枪



火花间隙



防爆接线箱



热熔胶棒



环氧树脂



固态去耦器



热收缩带

The engineering case 工程案例



曹妃甸矿石码头二期
钢管桩防腐工程



天津港南疆专业化矿石码头
钢管桩防腐工程



天津港临港工业港区粮油码头
钢管桩防腐工程



铝阳极水下焊接工程施工



钢桩码头铝阳极施工安装



钢桩码头铝阳极施工安装



管道阴极保护检测



柔性阳极现场施工安装



浅埋阳极地床现场施工



带状锌阳极现场安装施工



管道阴极保护焊接检测



管道内壁牺牲阳极施工安装



深井阳极安装现场施工



地埋储罐阴极保护镁阳极现场施工



大型储罐阴极保护现场施工



罐底网状阳极现场施工



固态去耦器现场施工安装



带状锌阳极接地极



近三年阴极保护产品在重点工程中应用业绩表

Nearly three years of cathodic protection products used in key project performance table

港工设施

- 大连北良油品码头钢桩防腐工程 2010年07月
- 丹东华能电厂码头维修钢桩防腐工程 2010年11月
- 锦州港航道导标工程钢管桩牺牲阳极防腐工程 2010年1 2月
- 宝钢集团公司二期焦化防腐保温工程 2011年03月
- 锦州港第三港池30IB泊位钢管桩牺牲阳极防腐工程 2011年05月
- 曹妃甸矿石码头一期钢管桩防腐工程 2011年07月
- 天津港北港池集装箱码头一期钢管桩防腐工程 2011年08月
- 营口港务集团303#泊位钢管桩防腐工程 2011年08月
- 宝钢马迹山码头钢管桩防腐工程 2011年04月

Port facilities

- The steel pile anticorrosion engineering of Dalian Beiliang oil product terminal July, 2010
- The dock repair steel pile anticorrosion engineering of Dandong Huaneng Power Plant November,2010
- The sacrificial anode anticorrosion engineering of pipe pile of Jinzhou port channel guide engineering December,2010
- The section 2 coking anti-corrosion insulation engineering of Baoshan Steel and Iron Group Corporation March,2011
- The sacrificial anode anticorrosion engineering of Jinzhou harbor No.3 harbor berth 30IB pipe pile May,2011
- The anticorrosion engineering of section 1 steel pipe pile of Caofeidian ore dock July,2011
- The anti-corrosion engineering of phase 1 steel pipe pile of Tianjin Port North port container terminal August, 2011
- The anti-corrosion engineering of 303# berth steel pipe pile of Yingkou port group August, 2011
- The anticorrosion engineering of Steel pipe pile of Baoshan Iron and Steel Group Majishan Port April,2011

管网储罐

- 武汉钢铁有限公司三炼钢10万立方米煤气柜防腐工程 2010年07月
- 莱州——昌邑输油管道工程阴极保护项目 2010年06月
- 长兴岛输水管道二期工程阴极保护项目 2010年09月
- 唐山市煤气管道工程阴极保护项目 2010年11月
- 中缅原油管道工程（缅甸段）马德首站原油罐区工程100000M3储罐防腐（国外部分工程）2013年02月
- 焦作市焦煤集团供热保温管道防腐保温工程 2011年05月
- 中缅原油管道工程（缅甸段）马德首站原油罐区工程-抛丸除锈及刷底漆工程（国内部分）2011年11月
- 内蒙古西部天然气管道长呼复线工程阴极保护项目 2012年04月
- 福建LNG天然气公司输气管道阴极保护工程 2012年07月
- 安阳钢铁集团冷扎厂煤气管道工程阴极保护项目 2012年10月
- 山东省天然气管道济南——青岛管线阳极保护工程 2012年10月
- 山西长治市城区南一环燃气管道工程阴极保护项目 2012年11月
- 德州市城镇电站接地网改造工程阴极保护项目 2012年11月
- 福建泉州青兰山油库输油管道工程阴极保护项目 2012年12月

Network storage tank

- The 100,000 cubic meters gas tank anti-corrosion engineering of Wuhan Iron and Steel Co. No.3 Steel Plant July,2010
- The cathodic protection project of Laizhou -- Changyi oil pipeline June,2010
- The phase 2 project cathodic protection engineering of Changxing Island water pipeline September,2010
- The cathodic protection project of Tangshan City gas pipeline November,2010
- the original tank area engineering 100,000M3 storage tank anticorrosion of the first station of Ma De of China-Myanmar oil pipeline project (Burma section) (part of foreign engineering) February,2013
- The anti-corrosion insulation engineering of Jiaozuo coking coal group heating pipeline May,2011
- The shot blasting cleaning and brush primer engineering of the first station of Ma De of China-Myanmar oil pipeline project (Burma section) (part of domestic engineering) November,2011
- The cathodic protection project of West Inner Mongolia natural gas pipeline Chang-Hu line engineering April,2012
- The cathodic protection of Fujian LNG natural gas company pipeline July,2012
- The gas pipeline cathodic protection project of Anyang Iron and Steel Group cold rolling plant October,2012
- Ji'nan-Qingdao pipeline cathodic protection project of Natural gas pipeline in Shandong Province October,2012
- The gas pipeline cathodic protection project of Shanxi Changzhi city No.1 south ring road November,2012
- The cathodic protection project of Dezhou city station grounding grid renovation project November,2012
- Fujian Quanzhou Qing Lanshan oil pipeline cathodic protection project December,2012

港工设施

- 湛江港保满集装箱码头一期钢管桩阴极保护工程 2012年11月
- 安哥拉原油码头工程 2012年06月
- 曹妃甸原油码头钢管桩牺牲阳极防腐工程 2012年7月
- 天津港临港工业港区粮油码头钢管桩防腐工程 2012年7月
- 曹妃甸矿石码头二期钢管桩防腐工程 2013年7月
- 鲅鱼圈30万吨矿石码头钢桩阴极保护工程 2013年9 月
- 天津港南疆专业化矿石码头钢管桩防腐工程 2013年02月
- 珠海港万山港区桂山油库码头多点系泊码头技术改造工程 2013年4月
- 海南洋浦海事基地码头钢板桩牺牲阳极保护工程 2013年06月

Port facilities

- The cathodic protection project of phase 1 steel pipe pile of Zhanjiang port Baoman container terminal November, 2012
- Angola crude oil terminal project June,2012
- The steel pipe pile sacrificial anode anticorrosion engineering of Caofeidian crude oil terminal July,2012
- The steel pipe pile anticorrosion engineering of Tianjin Port Lingang Industrial Zone July, 2012
- The phase 2 steel pipe pile anti-corrosion project of Caofeidian ore terminal July,2013
- The steel pile cathodic protection project of Bayuquan 300,000 tons of ore terminal September,2013
- The steel pipe pile anti-corrosion engineering of Tianjin Port Nanjiang Specialized Ore Terminal February,2013
- The technical transformation project of Zhuhai port Guishan oil depot wharf multi point mooring terminal April,2013
- The sheet pile sacrificial anode protection project of Hainan Yangpu maritime terminal base June,2013

Power chemical industry

- The diversion penstock pipeline cathode protection engineering of Dalian water works August,2011
- The frame anti-corrosion insulation engineering of Jiangsu Wangting power plant September,2011
- The cathodic protection project of Shaanxi Jingbian oil pipeline October,2011
- The cathodic protection project of Baoji Shitouhe reservoir water diversion pipeline March, 2012
- The corrosion insulation engineering of Zhumadian Zhongyuan gas plant August,2012

电力化工

- 大连自来水公司引水管道工程阴极保护项目 2011年08月
- 江苏望亭电厂框架防腐保温工程 2011年09月
- 陕西靖边县输油管道工程阴极保护项目 2011年10月
- 宝鸡石头河水库引水管道工程阴极保护项目 2012年03月
- 驻马店中原燃气电厂防腐保温工程 2012年08月