KORTEK
Corrosion Technologies Co Ltd

TURNKEY CATHODIC PROTECTION SYSTEMS

CORROSION CONTROL TECHNOLOGIES

KORTEK
Corrosion Technologies Co. Ltd.

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WHO WE ARE

KORTEK Corrosion Technologies Co. Ltd. was established in June 1992, in Ankara, Turkey. Our company is a market leader in Turkey in the field of corrosion technologies, particularly focused on cathodic protection. Specialized in cathodic protection, we deliver optimal engineering, consultancy and on-site application services throughout the world, providing periodic care and inspection services in the area.

Our company owns a workshop manufacturing a great number of materials related to our field of interest, alongside outsourcing hi-tech products overseas.

We also represent several world-renowned suppliers and producers. With our highly skilled professionals, we have undertaken several local and international projects safely and cost-effectively since 1992.

1992 — KORTEK was first established in Ankara, Turkey exclusively for cathodic protection services.

1997 — In first 5 years, more than 40 local cathodic protection projects had been successfully completed and put into operation.

2004 — First international project was undertaken and successfully carried out.

2011 — KORTEK implemented the Integrated Quality Management System

2014 — Relocated in our own premises due to our steady growth with more than 50 employees.

2015 2016 — KORTEK secured CP contracts of all Lots and Aboveground Stations of TANAP project (1800 km natural gas pipeline).

2018 — KORTEK R&D started out as a sister company to develop high-tech CP specialized devices.

OUR SCOPE

- Pipelines
  - Oil and Gas
  - Energy
  - Construction
  - Water and Wastewater
- Well Casings
- Vessels
- Storage Facilities / Reservoirs / Tanks
- Production Rigs
- Piers / Harbors / Docks /Wharfs

OUR SERVICES

- CP Consultancy
- CP Design and Design Review
- FEED Studies
- Data Analysis
- Research and Development
- Customer Training
- Material Supply
- Installation / Installation Supervision
- AC Mitigation
- System Commisioning
- Resistivity Profile
- Interference
- Site / Field Surveys
- Close Interval Potential Surveys (CIPS)
- Direct Current Voltage Gradient Survey (DCVG)
- Maintenance & Monitoring



ACCREDITATIONS

KORTEK is a corporate member of the following organizations.

NACE INTERNATIONAL
THE CORROSION SOCIETY

1987

VISION AND VALUES

Vision and values determine everything from employment to operation at home and abroad. But most of all, the following vision and values define what is meant to be KORTEK.

EXCELLENCE

KORTEK's standards are based on internationally acknowledged procedures. KORTEK is certified with:

- Environmental Management System ISO 14001
- Occupational Health and Safety System OHSAS 18001
- Quality Management System ISO 9001:2015

From engineering design to commissioning, KORTEK interprets and complies with all quality management requirements. Superior value is incorporated into the execution plan, the procedures, the specifications and the design guidelines of all work.

BEING A GOOD MEMBER OF THE COMMUNITY

Acting as a contractor and/or investor for construction and operation of industrial, commercial and infrastructure facilities at home and abroad, KORTEK's mission dictates that we must be involved in, and continuously increase our contribution to the communities where we work. Management of social impact includes the process of identifying, monitoring and managing the intended and unintended social consequences of a project. Our aim is to bring about a more sustainable and equitable environment.

SAFETY

"Zero Accident" policy is both a goal and achievement at KORTEK. We implement a comprehensive Health Safety and Environment (HSE) policy to protect all employees and associates working at KORTEK offices, construction sites and related facilities. It includes protection from every kind of pollution, hazard and accident that may result from the business.

SPEED

Enhancing existing technologies in search of developing more and more rapid means of mobilization and project completion methods is the desire of each and every project - execution group.

INNOVATION

Every engineering-related detail in completed and ongoing projects is constantly questioned and re-examined while innovative engineering solutions are being continually researched and developed for better and more efficient results. For this purpose, KORTEK Research & Development Engineering CO. LTD. has been established as a sister company of KORTEK Corrosion Technologies.

HEALTH, SAFETY, SECURITY AND ENVIRONMENT (HSSE) POLICY

In relation to HSSE, we will;

• Comply with the applicable statutory HSSE legislation and other requirements of the organizations we are a member of.

• Conduct training and awareness-raising studies to ensure all employees are aware of their individual HSSE responsibilities.

• Provide every kind of protection to prevent damage to the property and life of our employees and other people.

• Comply with both local and international arrangements and regulations related to environment, health and safety during the studies.

• Assess the environmental impact of our studies and take all kinds of precautions to minimize negative effects.

• Take necessary precautions to prevent waste by using energy and natural resources necessary for our studies effectively.

• Keep under control our waste occurring as a result of our studies, take necessary precautions to prevent air, water and soil pollution and develop our performance continuously.

SOCOTEC CERTIFICATION INTERNATIONAL

ISO 9001
ISO 14001
OHSAS 18001

UKAS MANAGEMENT SYSTEMS
0063

QUALITY MANAGEMENT POLICY

• Fulfilling the requirements of our Quality Management System and improving its efficiency.

• Providing the product that meet the requirements of both the customers and the legal regulations in operation.

• Increasing customer satisfaction by assuring customers that we always produce products of equal quality that meet the demands of them and legal regulations.

• Constantly revising our quality policy to maintain its convenience for our company/

• Getting into international markets and increasing our firm's competitive power without compromising quality.

• Performing each job undertaken with equal quality using the most advanced technological means, and trying to outperform ourselves.

• Creating an efficient monitoring and surveillance system using modern information management systems.

• Supporting training programs and increasing the qualifications of our workers with training.

• Establishing a young, hardworking, open-minded executive board with individuals who understand modern business relations.

TURNKEY CATHODIC PROTECTION SYSTEMS

Since June 1992, Kortek has focused only on cathodic protection works. Using the expertise of experienced specialists including NACE certified engineers and teamwork of different departments, Kortek provides everything regarding cathodic protection.

WE OFFER

- CP pre surveys,
- Project design,
- Material manufacturing and supply,
- Experienced CP staff

OUR PRIORITIES ARE

- Cost Effective & On-Time Services
- Well-documented procedures and methods
- Superior Quality in Products and Services

WE PROVIDE

- Site crew,
- Full installation,
- All types of testing equipment,
- Periodic monitoring services

CP DESIGN

From small underground piping to cross country pipelines, tank farms and off shore terminals, all CP solutions have been applied on most challenging sites since 1992.

Detailed design works have been constructed with experienced engineers. By following the strict rules of client-approved project documents, no result is a surprise to our well-known customers.

INSTALLATION WORKS

All CP designs are carried out by our large and fully-equipped crews on site. Under focused project management with self-driven methods and software, more than 25 years' experience is always on site.

Cathodic Protection application and monitoring is the key to protect big assets on energy. Customer needs and requirements are important. All types of equipment to monitor CP systems are provided by our company with an experienced team.

Project management is the key of success during the installation period. Company experience covers more than 2 years of CP application for long time construction works with fully assigned teams to track every step of the project. By using a large inventory of different application methods, correct solution is always on hand.

AC MITIGATION

AC mitigation is an essential aspect of corrosion prevention and it is one of the most important elements for safety. Ranging from construction and preventing shock hazard to operational transmission line induced AC tracking, Kortek is always on site before everyone to measure, model, simulate and apply the solution.

Utilizing the most advanced measurement kits and obtaining precise measurements before and after the application, we provide our clients every detail of their asset.

PIPELINE SURVEYS

Cathodic protection monitoring is a crucial step of corrosion prevention. KORTEK's experience of survey extends to hundreds of kilometers of pipeline across many geographically challenging sites.

Starting from the first soil surveys to periodic potential, DCVG and CIPS, Kortek could provide high-tech equipment with a large crew. Reporting on daily basis and submitting every detail of CP systems with recommended solutions to the clients is the standard survey procedure.




OFFSHORE (SHORELINE) CATHODIC PROTECTION PROJECTS

KORTEK has undertaken major offshore and shoreline cathodic protection projects. Some of the typical offshore structures protected by KORTEK are:
- Submerged Pipelines
-Marine Terminals
- Sheet and Tubular Piles
- Dock Structures and Jetties
KORTEK also provide services for design and supply of cathodic protection for old structures.

MATERIALS SUPPLY

KORTEK holds an extensive range of cathodic protection products covering every area of CP projects including:

- Anodes
  - Magnesium
  - Magnesium Tank
  - Aluminium
  - Iron Silicon
  - Cast Iron
  - Zinc Ribbon
- MMO
  - Rod
  - Tubular
  - Wire
  - Piggyback Wire Sock
- Junction Boxes
- Corrosion Coupons
- Shunts
- Remote Monitors
- Transformer Rectifier Units
- Switch Mode Power Supply
- Galvanic Anode Backfill
- Thermite Welding
- Spark Gaps
- Splice Kits
- End Caps
- CP Cables
- Repair Patches
- Solid State Decouplers
- Polarization Cells
- Reference Electrodes
  - Permanent
  - Portable
- Zinc Earthing Electrodes
- Casing Fillers
- Carbonecous Backfill
- Digital Multimeters
- Data Loggers
- Soil Resistance
- Isolation Testers
- Steel Test Posts
- BigFink Test Posts
- Survey Equipment

OUR PARTNERS

KORTEK collaborates with several companies in different territories in order to provide the best quality solutions to customers' needs.

UNICORR
ADVANCED CATHODIC PROTECTION

PRODUCT RANGE BY KORTEK R&D ENGINEERING

UniCorr is the product range designed and developed by our R&D team specifically for the needs and requirements in the cathodic protection field works observed for more than 25 years on site. Hi-tech improvements have been made to facilitate your data collection. UniCorr products can be run on all commercially available Android™ mobile phones and tablets. Software development is being done to ease coordination and to decrease the total man hour spent data collection and reporting.

Other than hi tech data collection devices, we also provide solid state polarization cell devices to suit all your custom needs. Our latest products include;

ALL-IN-ONE CP TESTER

All-In-One CP Tester has been designed to be your ultimate helper during CP surveys:

- Rugged and Portable
- 2 Isolated Channel DC Voltmeter
- In-built GPS synchronized Current Interrupter
- Data Logger with internal storage
- In-built and external battery-powered adjustable DC Output
- In-Built GSM option for remote control and monitoring
- Android APP for Bluetooth access and Windows PC User Interface

SOLID STATE POLARIZATION CELL

Solid-State Polarization Cells are used to mitigate pipeline AC voltages resulting from induction from overhead power lines sharing the same right-of-way. A main purpose of the AC discharge devices is to protect operating personnel from hazardous touch voltages. An increasingly important task for the AC discharge device is to inhibit AC influenced corrosion by lowering the pipe to soil AC voltage. CP experts have reached agreement that excessive cathodic protection combined with AC voltage is a non-tolerated mixture likely to cause accelerated AC corrosion.

Features:
- Mitigates pipeline induced AC voltages
- Decouples lightning transients
- Protects operating personnel
- Inhibits AC influenced corrosion

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KORTEK
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2. QUALITY MANAGEMENT SYSTEM CERTIFICATES

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CERTIFICATION INTERNATIONAL

SOCOTEC

CERTIFICATE

N° CN/13234IQ

certifies that:

Kortek Korozyon Teknolojileri Ltd. Sti

Mustafa Kemal Mahallesi 2147. Sokak No:7 06520 Cankaya - Ankara - Turkey

operates a management system that has been assessed as conforming to:

ISO 9001 : 2015

for the scope of activities:

Engineering, site survey, installation, maintenance, periodic monitoring, training, research and manufacturing activities regarding cathodic protection, corrosion prevention and coating of metallic structures.

Issue date: **05 October 2018**
Valid until: **27 November 2020** (Subject to adherence to the agreed ongoing programme, successful endorsement of certification following each audit and compliance with the terms and conditions of certification.)
Original date of certification: **28 November 2011**

Xavier Daniel Certification General Manager

UKAS MANAGEMENT SYSTEMS 0063

IAF

SOCOTEC Certification UK Delta Business Park - Swindon SN5 7XP - UNITED KINGDOM
www.socotec-certification-international.com

CERTIFICATION INTERNATIONAL

SOCOTEC

CERTIFICATE

N° CN/13234IE

certifies that:

Kortek Korozyon Teknolojileri Ltd. Sti

Mustafa Kemal Mahallesi 2147. Sokak No:7 06520 Cankaya - Ankara - Turkey

operates a management system that has been assessed as conforming to:

ISO 14001 : 2015

for the scope of activities:

Engineering, site survey, installation, maintenance, periodic monitoring, training, research and manufacturing activities regarding cathodic protection, corrosion prevention and coating of metallic structures.

Issue date: **05 October 2018**
Valid until: **27 November 2020** (Subject to adherence to the agreed ongoing programme, successful endorsement of certification following each audit and compliance with the terms and conditions of certification.)
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IAF

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www.socotec-certification-international.com

APPENDIX TO CERTIFICATE

N° CN/13234I

Kortek Korozyon Teknolojileri Ltd. Sti

Site 1

Ivedik Organize Sanayi Oz Ana Yapi Kooperatifi 24. Cadde 1469. Sokak No:122-124 Ostim - Ankara - Turkey

Xavier Daniel Certification General Manager

SOCOTEC Certification UK Delta Business Park -
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3. MATERIAL DATA-SHEETS

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MAGNESIUM ANODES

GALVANIC CATHODIC PROTECTION

KORTEK
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Magnesium anodes are commonly used in Cathodic Protection, as Mg metal has more negative potential than the other galvanic materials.

In order to ensure high quality of the magnesium anode, high purity of magnesium ingot is using with advanced casting technology and chemical analysis and potential tests are performed on every heat.

APPLICATION

- Temporary protection of buried pipelines
- Protection of well coated buried pipelines
- Internal protection of water tanks
- Protection of small marine structures
- “Hot spot” locations for buried & submerged steel structures
- Magnesium anode is suitable to be used in soil, mud, fresh water, brackish water and sea water.

ALLOY COMPOSITION

	Standard	High Potential
Aluminum	5.30-6.70%	0.01% max
Zinc	2.50-3.50%	-
Manganese	0.15-0.70%	0.50-1.30%
Silicon	0.10% max	0.05% max
Copper	0.02% max	0.02% max
Nickel	0.002% max	0.001% max
Iron	0.003% max	0.03% max
Other Impurities	-	0.05% max
Total	0.30% max	0.30% max
Magnesium	Balance	Balance

ELECTROCHEMICAL PROPERTIES

	Standard	High Potential
Open Circuit Potential wrt $Cu/CuSO_4$	1.57 - 1.60 Volts	1.77 - 1.82 Volts
Closed Circuit Potential wrt $Cu/CuSO_4$	1.52 - 1.57 Volts	1.64 - 1.69 Volts
Output Capacity	1200 A.h/kg	1100 A.h/kg
Current Efficiency	50%	50%

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MAGNESIUM ANODES

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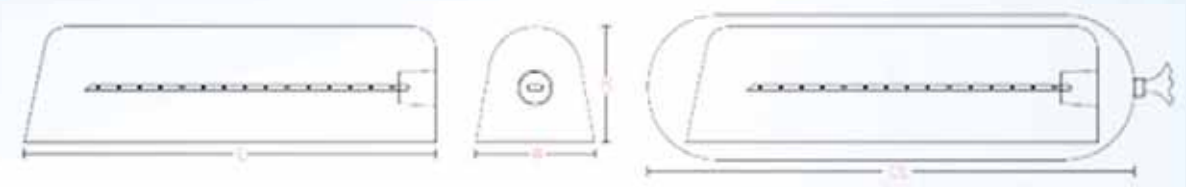
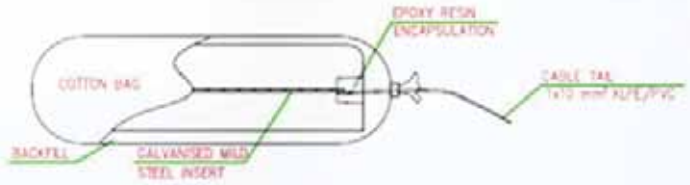
GALVANIC CATHODIC PROTECTION

ANODE DIMENSIONS
D TYPE



TYPE	Weight (Nominal)				Anode Dimensions							
	Bare		Packaged		A (Width)		B (Heigth)		C (Length)		Overall Length (OL)	
	lbs	kg	lbs	kg	in	mm	in	mm	in	mm	in	mm
3D2	3	1,4	8	3,6	3,5	89	3,75	95	5	127	10	25,4
5D2	5	2,3	17	7,7	3,5	89	3,75	95	8,5	216	12	305
6D2	6	2,7	19	8,6	2,75	70	3	76	21,5	547	26	660
14D2	14	6,4	46	20,9	2,75	70	3	76	33,5	850	38	965
20D2	20	9,1	70	31,8	2,75	70	3	76	49,5	1260	55	1397
17D3*	17	7,7	45	20,4	3,5	89	3,75	95	26	657	34	864
32D3*	32	14,5	91	41,3	5,5	139	5,75	146	20,5	523	25	635
48D3	48	21,8	100	45,4	5,5	139	5,75	146	30	765	35	889
60D3	60	27,2	125	56,8	4,5	114	4,5	114	60	1520	64	1626

*** KORTEK standard stock**
Other sizes can be manufactured to suit customer requirements.



The bare Mg anode is assembled with cable, selaed with epoxy resin and packaged in a cotton bag.

Composition of Backfill

- Gypsum 75%
- Bentonite 20%
- Sodium Sulphate 5%

Environmental Safety

As the prepackaged anodes buried to the ground, the harmful elements may leak to the soil and groundwater when anodes are in use. This situation causes the pollution of environment.

KORTEK prepackaged anodes are made of recyclable materials or easily decomposable materials and the content of remaining harmful elementws are lower than the safety standards which will not bring any pollution to the surrounding.

Harmful Elements in Backfill

Cd (max)	As (max)	Hg (max)	Pb (max)
1 ppm	1 ppm	1 ppm	10 ppm

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MAGNESIUM TANK ANODES

GALVANIC CATHODIC PROTECTION

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Magnesium Anodes are commonly used in Cathodic Protection, as Mg metal has more negative potential than the other galvanic materials.

In order to ensure high q uality of the Magnesium Anode, high purity of magnesium ingot is using with advanced casting technology.

APPLICATION:

-Temporary protection of buried pipelines.

-Protection of well coated buried pipelines.

-Internal protection of water tanks.

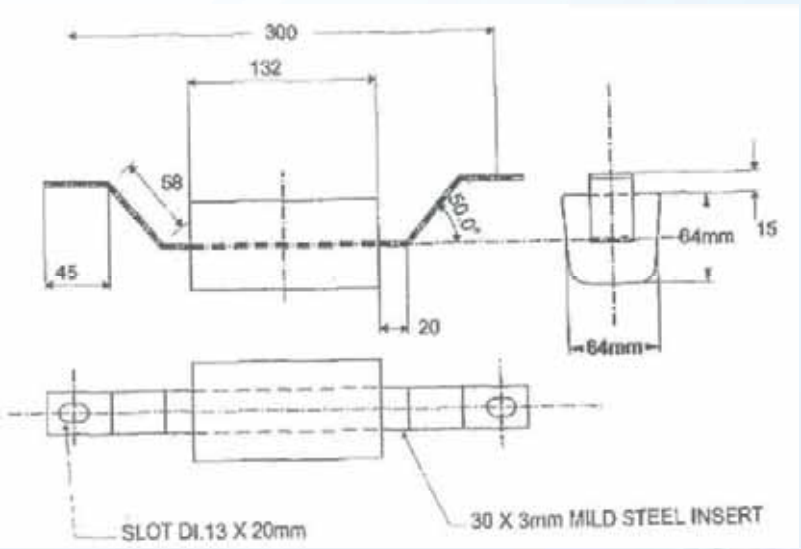
-Protection of small marine structures.

-"Hot spot" location for buried & submerged steel structures.

Mg anode is suitable for use in soils, mud, fresh water , brackish water and sea water.

	Standard	High Potential
Aluminum	5.30 – 6.70%	0.01% max
Zinc	2.50 – 3.50%	-
Manganese	0.15 – 0.70%	0.50 – 1.30%
Silicon	0.10% max	0.05% max
Copper	0.02% max	0.02% max
Nickel	0.002% max	0.001% max
Iron	0.003% max	0.03% max
Other Impurities Each	-	0.05%max
Total	0.30% max	0.30%max
Magnesium	Balance	Balance

	Standard	High Poteantial
Open Circuit Potential wrt $Cu/CuSO_4$	1.57 – 1.60 Volts	1.77 – 1.82 Volts
Closed Circuit Potential wrt $Cu/CuSO_4$	1.52 – 1.57 Volts	1.64 – 1.69 Volts
Output Capacity	1200 A/hr/kg	1100 A/hr/kg
Current Efficiency	50%	50%



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ALUMINIUM ANODES

GALVANIC CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

We supply series of aluminum anodes for defend the corrosion of steel structures in seawater. The performance of anode is affected by the chemical composition of the alloy. We adopt high purity of aluminum ingot for the anodes. The anodes are casted automatically, thus the anode alloy is uniform, free of dust and oxides.

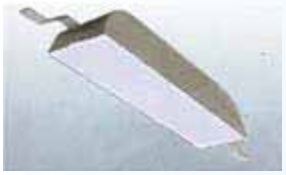
APPLICATION

- Protection of underwater routed pipelines
- “Hot spot” locations for submerged steel structures

Please contact us for advice on optimizing an anode to suit your specific requirements.

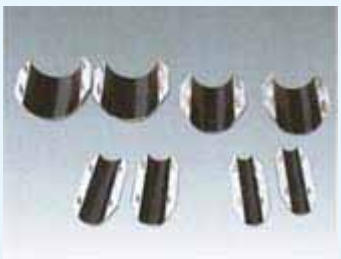
ELECTROCHEMICAL PROPERTIES

Type	Open Voltage (-V)	Closed Voltage (-V)	Capacity A.h/kg	Efficiency
Al-Zn-In-Si	1,05-1,18	1,05-1,12	2500 min	90% min
Al-Zn-In-Ti	1,05-1,18	1,05-1,12	2500 min	90% min
Al-Zn-In-Mg-Ti	1,10-1,18	1,05-1,12	2600 min	92% min



ALLOY SPECIFICATIONS

Type	Zn %	In %	Si %	Fe %	Mn %	Cu %	Ti %	Mg %	Al %
AL-Zn-In-Si	2,8-3,5	0,01-0,02	0,08-0,2	0,1 max	0,1 max	0,005 max	-	-	Balance
AL-Zn-In-Ti	2,0-5,0	0,015-0,05	0,01 max	0,1 max	0,1 max	0,005 max	0,01-0,05	-	Balance
AL-Zn-In-Mg-Ti	4,0-7,0	0,02-0,05	0,1 max	0,15 max	-	0,01 max	0,01-0,08	0,5-1,5	Balance



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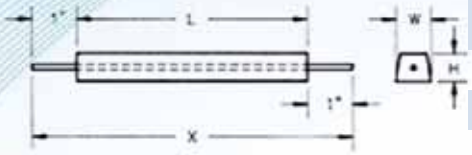
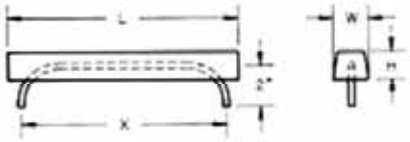
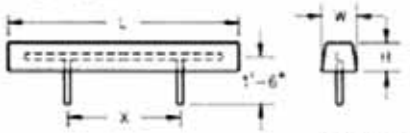
CORE TYPE A



CORE TYPE B



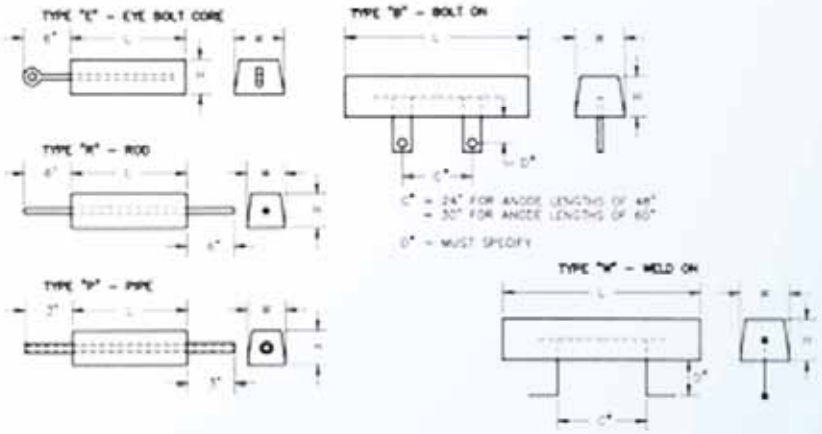
CORE TYPE C



ALUMINUM PLATFORM & JETTY ANODES

Type	Weigth (Nominal)		Anode Dimensions							
			Length (L)		Up Width		Bottom Width		Heigth (H)	
	lbs	kg	in	mm	in	mm	in	mm	in	mm
AL-S01	606,27	275	90,5	2300	8,50	220	9,50	240	9	230
AL-S02	363,76	165	63	1600	8,50	220	8,25	210	8,50	220
AL-S03	317,47	144	59	1500	6,75	170	8	200	7	180
AL-S04	176,37	80	31,5	800	8	200	11	280	6	150
AL-S05	123,46	56	49,25	1250	4,50	115	5,25	135	5	130
AL-S06	116,84	53	35,50	900	6	150	6,75	170	6,25	160
AL-S07	99,208	45	39,50	1000	4,50	115	5,25	135	5	130
AL-S08	74,957	34	29,50	750	4,50	115	5,25	135	5	130

Please specify the length between supports (X) and core type.



ALUMINUM TANK ANODES

Type	Weigth (Nominal)		Anode Dimensions							
			Length (L)		Up Width		Bottom Width		Heigth (H)	
	lbs	kg	in	mm	in	mm	in	mm	in	mm
AL-T01	47,40	21,50	59	1500	2,50	65	3	75	2,75	70
AL-T02	50,71	23	19,75	500	4,50	115	5,25	135	5	130
AL-T03	44,09	20	19,75	500	4,25	110	5	130	4,75	120
AL-T04	29,10	13,20	4	100	2,25	58	3	78,50	2,75	68
AL-T05	22,05	10	31,50	800	2,25	56	3	74	2,50	65

Please specify the length between supports (C) and core type.

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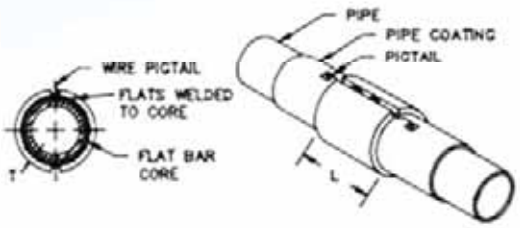
ALUMINIUM ANODES

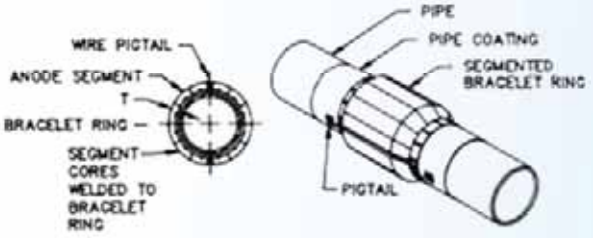
KORTEK
Corrosion Technologies Co. Ltd.

GALVANIC CATHODIC PROTECTION

SEMI–CYLINDRICAL (SQUARE)



MULTI–SEGMENTED (TAPERED)



ALUMINUM BRACELET ANODES

Type	Weigth (Nominal)		Anode Dimensions							
			Diameter		Thickness (T)		Length (L)		Pipe Diameter	
	lbs	kg	in	mm	in	mm	in	mm	in	mm
AL-B20	231,49	105	20,25	516	2	51	20	505	20	508
AL-B16	198,42	90	16,25	414	3	76	14,50	370	16	406
AL-B14	169,76	77	14,25	364	3	76	14,50	370	14	356
AL-B12	149,91	68	12,25	313	2	51	21,75	550	12	305
AL-B10	119,05	54	10,25	262	2	51	20,50	520	10	254
AL-B08	92,59	42	8,25	211	2	51	19,75	500	8	203
AL-B06	59,52	27	6,25	161	2	51	16,75	425	6	152

Please specify the type of bracelet anode required.

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ZINC EARTHING ELECTRODES

GALVANIC CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

Zinc is one of cathodic protection anode metal due to relatively high potential in galvanic series and longest serving anode material. It has number of closely related applications all of which can be served by KORTEK high quality products.

APPLICATION

- To avoid bi-metallic corrosion of associated structures.
- To mitigate voltages introduced in pipelines by adjacent overhead AC power lines.
- Corrosion control of underground metallic structures.

In grounding earthing application of zinc anodes, packaged anode where the anode has a high length to weigth ratio in order to minimise its ohmic resistance to ground.

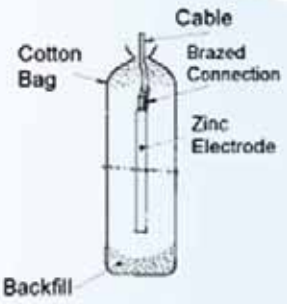
ELECTROCHEMICAL PROPERTIES	
Potential wrt $Cu/CuSO_4$	1.10 Volts
Output Capacity	780 A.hour/kg
Current Efficiency	95%
Consumption	11.2 kg/A.year

ALLOY COMPOSITION	Standard
Aluminum	0.15 - 0.30%
Cadmium	0.04 - 0.06%
Iron	0.002% max
Tin	0.001% max
Copper	0.001% max
Lead	0.004% max
Silicon	0.10% max
Zinc	Remainder

The zinc used in KORTEK anodes is within the specification laid down by US Mil-A-18001H.

ZINC EARTHING ELECTRODE–SINGLE

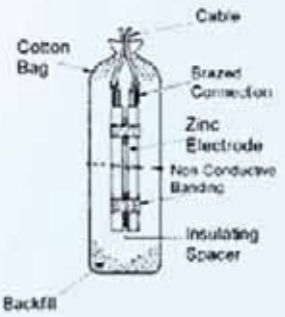
Standard Zinc casting and package dimensions are represented below. Other than the standard casting can be supplied upon request.



Size Bare	1 No. 35x35x1525 mm
Size Packaged	120 mm Dia x 1700 mm Length
Cable	1 x 25 mm^2 XLPE/PVC
Weigth	35 kgs (77 lbs)

ZINC EARTHING ELECTRODE–DOUBLE

These are similar in design to the single electrode except there are two zinc anodes which are insulated from each other. Generally, one anode rod would be connected to the structure to be protected, and the other to an earthing device. The rods are surrounded by a low resistivity backfill which allows any large stray currents to pass between the electrodes. This has the benefit of earthing a structure to ground without providing a direct connection.



Size Bare	2 No. 35x35x1525 mm
Size Packaged	165 mm Dia x 1700 mm Length
Cable	1 x 25 mm^2 XLPE/PVC
Weigth	70 kgs (154 lbs)

Other anode types are manufactured according to requirements or specifications.

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GAL 03-02

ZINC RIBBON ANODE

KORTEK
Corrosion Technologies Co. Ltd.

GALVANIC CATHODIC PROTECTION

APPLICATION

Zinc ribbon anodes provide a very simple, cost effective, maintenance free method of corrosion control for buried or immersed metals such as iron, steel, aluminum, copper, etc. It is especially useful for unattended applications; those where other cathodic protection systems requiring monitoring and/or frequent maintenance cannot be possible.

It can also be used as a temporary system prior to the installation of an impressed current system and as a method of providing AC mitigation.

Typical installations on pipelines and tank bottoms

TYPICAL USES

- External areas of steel pipe, e specially in difficult environments such as below grad e in rocky and mountainous terrain, thawed zones in permafrost, etc.
- Interior bottom areas of oil storage tanks where salt water settles out.
- Exterior bottoms of oil storage tanks.
- Interstitial spaces between old, corroded and new storage tank bottoms.
- In the limited space between inner and outer casings of wells of various kinds.
- For grounding steel tower footings of overhead power systems.
- To provide cathodic protection as well as to dissipate induced A.C. current on coated steel pipe.
- For personnel safety, as well as corrosion protection. To ground valves and test stations of pipe lines which are subject to induced A.C. current and fault currents.

ELECTROCHEMICAL PROPERTIES OF ZINC RIBBON ANODES

	Open Circuit Potential (-V)*	Closed Circuit Potential (-V)*	Current Capacity (A.hour/lb)	Galvanic Efficiency (%)	Consumption Actual (lb/A.year)
TYPE I	1,05 min	1,00 min	819	95	54,63
TYPE II	1,10 min	1,05 min	819	90	57,71

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MIXED METAL OXIDE ANODES

IMPRESSED CURRENT CATHODIC PROTECTION

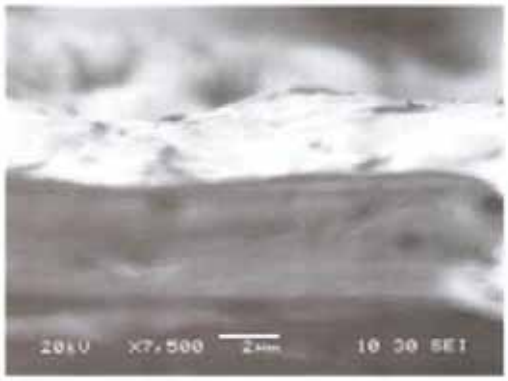
KORTEK
Corrosion Technologies Co. Ltd.

APPLICATION

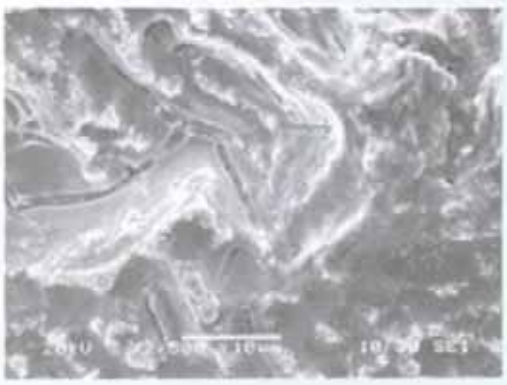
- Marine Structures,
- Seawater Intakes,
- Deepwell Groundbeds,
- Horizontal Groundbeds,
- Distributed Anodes,
- Tank Internals& Tank Bottoms

Suitable to use in soil, mud, carbonaceous & pet coke backfill, fresh, brackish and sea water. minimise its ohmic resistance to ground.

COATING SURFACE QUALITY



Coating cross section



Coating surface

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KORTEK
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Ti/MMO Ribbon Anode

MMO ribbon anodes are manufactured using titanium substrate which meets ASTM B265 Grade 1 Standard and coated with Mixed Metal Oxide (Ir/Ta).

Nominal Dimensions:

Width: 6.35mm

Thickness: 0.635mm

Standard coil Length: 152.4meter

Shipping coil weight: 2.8kgs

Chemical Composition:

ASTM B338 Grade I

C%	Fe%	N%	O%	H%	Other(Single)	Other(Total)	Ti
0.08 max	0.20 max	0.03 max	0.18 max	0.015 max	0.10 max	0.40 max	Balance

Current output and Life: 17mA/meter for 50 year

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KORTEK
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TI Conductor Bar

Titanium conductor bar are manufactured using titanium substrate which meets ASTM B338 Grade-1 Standard.

Nominal Dimensions:

Width: 12.7mm
Thickness: 0.90mm

Standard coil Length: 152.4meter

Shipping coil weight: 7.8kgs

Chemical Composition:

ASTM B338 Grade I

C%	Fe%	N%	O%	H%	Other(Single)	Other(Total)	Ti
0.08 max	0.20 max	0.03 max	0.18 max	0.015 max	0.10 max	0.40 max	Balance

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KORTEK
Corrosion Technologies Co. Ltd.

Specification of MMO Rod Anode

We hereby certify that the anode quoted comply with the following specification:

Ti/MMO Rod:

MMO wire anodes are manufactured using titanium substrate which meets ASTM B338 Grade 1 Standard and coated with Mixed Metal Oxide (Ir/Ta).

Nominal Dimensions:
Diameter: 32mm
Length: 500mmr

Chemical Composition:

ASTM B338 Grade I

C%	Fe%	N%	O%	H%	Other(Single)	Other(Total)	Ti
0.08 max	0.20 max	0.03 max	0.18 max	0.015 max	0.10 max	0.40 max	Balance

MMO coating: 5μm min

Current output: 5A (100A/M^2)

Designed Life: 20 years

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KORTEK
Corrosion Technologies Co. Ltd.

MMO/TITANIUM TUBULAR ANODE

High performance MMO anodes suitable for soil, sea mud, seawater, and fresh water environments. In seawater, the suggested working current density is 600Amps/m2, and in fresh water and soil the suggested current density is 100Amps/m2.

The substrate confirm to ASTM B338 Grade I and the active coating material consist of iridium oxide and tantalum oxide..

ASTM B338 Grade I	CHEMICAL COMPOSITION							
	Fe max	C max	N max	H max	O max	Other element (single)	Other elements (total)	Ti
	0.20	0.08	0.03	0.015	0.18	＜0.1	＜0.4	Balance

The typical MMO anodes supplied by KORTEK as below:

Item No.	Standard Dimension	Current Density	Current Output	Working Life
1	16mm dia. X 500mm	100Amps/m2	2.5 Amps in soil	20 Years
		600Amps/m2	15 Amps in seawater	20 Years
2	16mm dia. X 1000mm	100Amps/m2	5 Amps in soil	20 Years
		600Amps/m2	30 Amps in seawater	20 Years
3	25mm dia. X 500mm	100Amps/m2	4 Amps in soil	20 Years
		600Amps/m2	23.5 Amps in seawater	20 Years
4	25mm dia. X 1000mm	100Amps/m2	8 Amps in soil	20 Years
		600Amps/m2	48Amps in seawater	20 Years
5	25mm dia. x 1500mm	100Amps/m2	12Amps in soil	20 Years
		600Amps/m2	72Amps in seawater	20 Years
6	32mm dia. X 500mm	100Amps/m2	5 Amps in soil	20 Years
		600Amps/m2	30 Amps in seawater	20 Years
7	32mm dia. X 1000mm	100Amps/m2	10 Amps in soil	20 Years
		600Amps/m2	60 Amps in seawater	20 Years
8	32mm dia. X 1220mm	100Amps/m2	12 Amps in soil	20 Years
		600Amps/m2	74 Amps in seawater	20 Years

KORTEK is also supplying the MMO tubular anodes as per client's request dimensions.

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KORTEK
Corrosion Technologies Co. Ltd.

IMPRESSED CURRENT CATHODIC PROTECTION

Specification of MMO Wire Anode

We hereby certify that the anode quoted comply with the following specification:

Ti/MMO Wire:

MMO wire anodes are manufactured using titanium substrate which meets ASTM B338 Grade 1 Standard and coated with Mixed Metal Oxide (Ir/Ta).

Nominal Dimensions:
Diameter: 2.3mm / 2.6mm
Standard coil Length: 100meter

Chemical Composition:

ASTM B338 Grade I

C%	Fe%	N%	O%	H%	Other(Single)	Other(Total)	Ti
0.08 max	0.20 max	0.03 max	0.18 max	0.015 max	0.10 max	0.40 max	Balance

Current output: 21.68mA/meter for dia2.3mm
24.50mA/meter for dia2.6mm

Designed Life: 40 years

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IMP 01-06

IMPRESSED CURRENT CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

MMO Piggyback Wire Sock Anode is an ideal CP product to replace the conventional anodes used to protect tank bottom, underground vessel, pipeline. KORTEK's sock anode are made from high grade titanium wire with Mixed Metal Oxide catalyst, and can last for more than 50 years.

Application:

- Tank bottom
- Underground vessels
- Pipelines

Material Specification:

- Substrate: ASTM B348 Grade I / II
- Catalyst: Mixed Metal Oxide
- Cable: HMWPE, XLPE/PVC, Kynar/HMWPE, etc.
- MMO wire to cable connection: Crimp Connection: 5meters to 10meters each

Advantages:

- Easy handling and installation
- Cost effective
- Up to 50 years life time
- Customized anode output and life

Typical Anode Specification:

MMO wire diameter	1.0mm	1.5mm	3.0mm
Titanium substrate	ASTM B348 Grade I / II		
Mixed Metal Oxide Catalyst	Ir-Ta		
Current output for 20 years life	67mA/m	89mA/m	195mA/m
Current output for 30 years life	45mA/m	65mA/m	130mA/m
Current output for 50 years life	28mA/m	41mA/m	78mA/m
Backfill	Calcium Petroleum Coke		
Sock Material	Porous non-woven fabrics		
Sock dimension	38mm Diameter		
Length per reel	150 Meters (Customized length at requested)		
Customized roll length and output is available at request			

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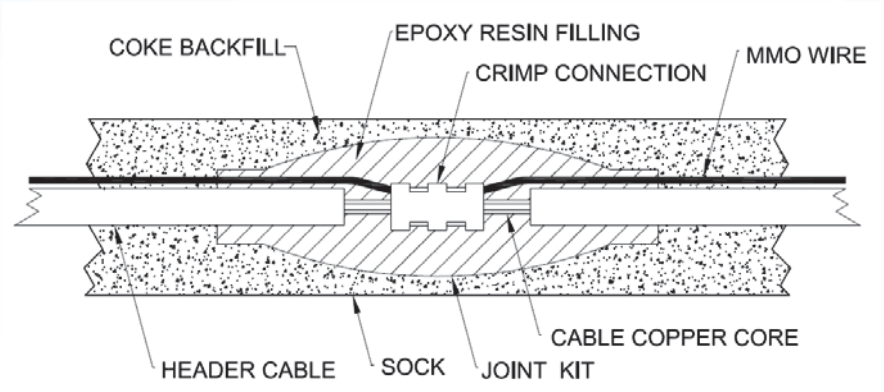
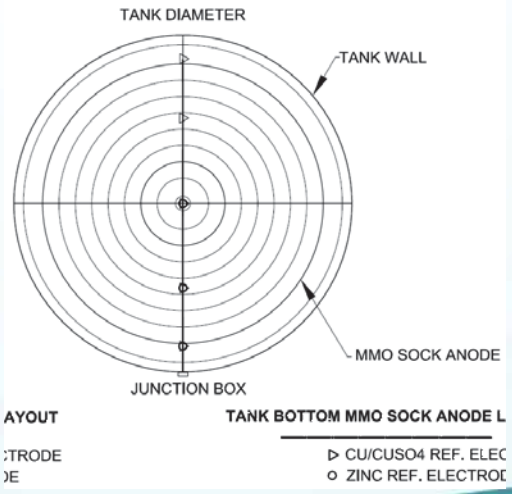
Anode Fabrication:



Typical anode header cable is 8AWG or 10AWG High Molecular Weight Polyethylene conform to ASTM D1248, Type 3, Class C, Category 5. which proved the ideal cathodic protection cable for onshore project. The MMO wire to cable is connected by a high pressure crimp and sealed in a joint kit with epoxy resin to make sure low electric resistance and symmetrical current distribution from a continuous length of at least 150meters. The high quality calcium petroleum coke backfill will improve the working environment of the MMO wire and the current density as well.

Tank bottom Cathodic Protection:

The anode was buried in sand which is about 400mm under the tank bottom from the center of the tank circle to the tank wall. Proper space between the sock anode should be maintained in order to provide desire current distribution. After the layout of the sock anode, the anode should connected to the power cable by special cable joint kit to make sure perfect electric connection. And then all anode cable together with reference electrode cable should connected to the outer junction box.



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SILICON IRON ANODES

IMPRESSED CURRENT CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

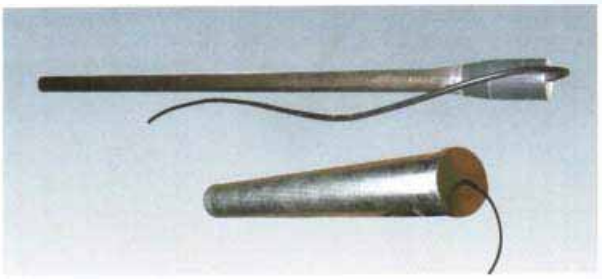
KORTEK's Silicon Iron anodes are made by Chill Casting in metal mould. The anodes have higher density, more compact crystal structure and low consumption rate, thus have longer life.

Our SiFe anodes are made according to ASTM A518-86 (grade 3) standard.

APPLICATION

- Offshore Structures,
- Underground Pipelines,
- Horizontal Groundbeds,
- Distributed Anodes,

Suitable to use in soil, mud, carbonaceous & pet coke backfill, fresh, brackish and sea water.



ELECTROCHEMICAL PROPERTIES

Type	C	Mn	Si	Cr	Mo	Cu	P	S	Fe
BS 1591:1975 SiCr144	≤1,40%	≤0,50	14,25-15,25%	4,00-5,00%	-	-	≤0,25%	≤0,10%	Balance
ASTM A518-99 Grade 3	0,70-1,10%	≤1,50	14,20-14,75%	3,25-5,00%	≤0,20%	≤0,50%	-	-	Balance

Type	Dimension				Surface Area		Weight	
	Dia		Length					
	in	mm	in	mm	ft2	m2	lbs	kg
YS-R02	1,5	38	35,5	900	1,29	0,12	16,53	7,5
YS-R03	1,5	38	47,25	1200	1,72	0,16	22,05	10
YS-R04	1,5	38	60	1524	2,04	0,19	28,66	13
YS-R05	2	50	35,5	900	1,72	0,16	29,76	13,5
YS-R06	2	50	47,25	1200	2,15	0,2	36,38	16,5
YS-R07	2	50	60	1524	2,80	0,26	47,18	21,4
YS-R11	3	76	35,5	900	3,01	0,28	74,96	34
YS-R12	3	76	47,25	1200	3,23	0,3	88,18	40
YS-R13	3	76	60	1524	4,20	0,39	110,01	49,9

All dimensions and weights shown are nominal. Actual dimensions/weight will be adjusted according to drawings.

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CARBONACEOUS BACKFILL

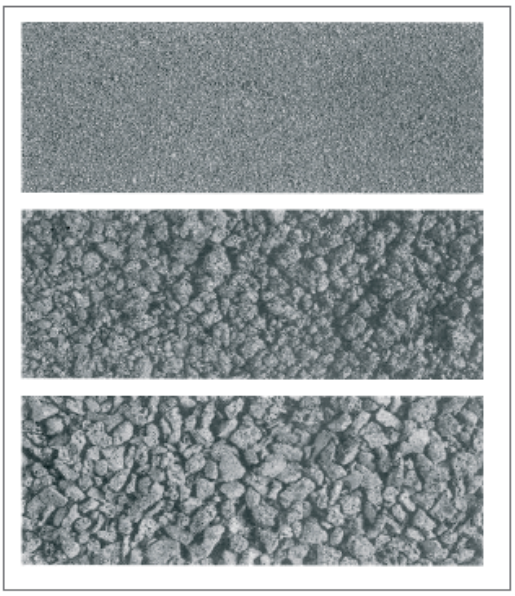
IMPRESSED CURRENT CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

APPLICATION

Impressed current cathodic protection groundbeds and packaged impressed current anodes.

CARBONACEOUS BACKFILL DATA



TYPICAL ANALYSIS			
Moisture	(ISO 589:2008)	8.87	--
Ash	(1501171-97)	11.46	12.58
Volatile Matter	(ISO 562-98)	0.93	1.02
Fixed Carbon	By Calculation	78.74	86.40
Sulphur	(ASTM D 3177-02)	0.66	0.72
Phosphorus		--	0.0126

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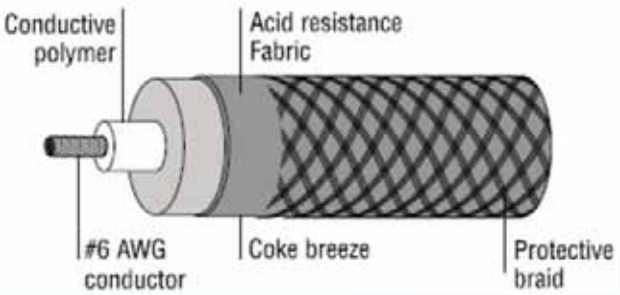
AnodeFlex 1500

KORTEK
Corrosion Technologies Co. Ltd.

IMPRESSED CURRENT CATHODIC PROTECTION

Construction: Five basic elements:
Central Copper Conductor: #6 AWG. Serving as a low resistance busbar to deliver the required current distance without incurring substantial longitudinal voltage drop.
Conductive polymer: 0.5 in (13mm) in diameter special extrusion, sealing the copper conductor from chemical attack, yet allowing current to low through it, from the conductor to the environment all along its length.

Coke breeze: Pre-packaged, high performance calcined petroleum coke breeze, serving as the active matrix in which the electrochemical reactions take place. Designed for min. 20 years service life at max current output of 16mA/ft (52mA/m).
Fabric jacket: İntegrated woven, acid resistant and porous jacket holding the coke breeze in place around the anode.
Protective braid: Tough, porous, non-conductive braid enhancing the abrasion and damage resistance of the fabric jacket.



Product Selection Guide	
Recommended Max Design Current Output in Soil	52 mA/m (16 mA/ft)
Min Installation and Storage Temperature	-18˚C (0˚F)
Min Bend Radius	500mm (20 in)

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AnodeFlex 1500

KORTEK
Corrosion Technologies Co. Ltd.

IMPRESSED CURRENT CATHODIC PROTECTION

Product Dimensions

Nominal diameter	28 mm (1.5 in)
Weight	1,49 Kg/m (1.0 lb/lt)
Length	494 m ±6m (1620 ft ±20 ft)
Coke breeze requirements	1.15 kg/m (0.77 lb/ft)

Property	**Test method**	**Typical Value**
Copper Condactor		
Dimension	ASTM B-263	6 AWG
Resistance	ASTM B-193	1.5×10^{-3} Ohm/m
Conductive Polymer		
Dimensions	ASTM B-263	Pass
Volume resistivity	ASTM B-193	1.5 Ohm-cm
Coke Breeze		
Fixed carbon	ASTM D-172	99.7%
Resistivity	G.L.C – C -12A @ 23°C (73°F), 10 bar (145psi)	0.4 Ohm-cm
Fabric Jacket		
Weight	Min. 200 g/m²	229 g/m²
Bursting strength	ISO 3303	575 N
Abrasion resistance	ASTM D-4157	219 cycles to fature
Fluid resistance	Internal immersion test 6 months	Pass
Chlorine resistance	Internal immersion test 6 months	Pass
UV resistance	ASTM G-53 @ 60° C (140° F), 8 hrs @ 50° C (122° F), 4 hrs condensation	55% tear strength loss

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AnodeFlex - Splice

KORTEK
Corrosion Technologies Co. Ltd.

IMPRESSED CURRENT CATHODIC PROTECTION

The AnodeFlex™ 1500 Tee Splice kit is designed for 3-way connections of the AnodeFlex™1500 anode strand and lead wire(s). The splice consists of a heat shrinkable tee boot, factory installed over a crimped 3-way connection of anode lead wire double coated with a high-molecular-weight polyethylene insulation.
The long term performance of AnodeFlex™1500 is conditional upon keeping the base copper conductor and electrical connection isolated from water.

Typical Kit Compenent Dimension for AnodeFlex™1500 – End Cap Splice

Description	Type dimension	Requirement in mm (In)
Abrasion paper	Width×Length	50×150 (1.97×5.90)
Tie wraps	Length	170 (6.69) min.
Aluminum tape	Width×Length	50×150 (1.97×5.90)
Sealing mastic strip	Width×Thickness×Length	50×3×1400 (1.97×0.12×55.12)
Heat shrinkable tublng	Length Inside diameter supplied Inside diameter recovered Wall thickness recovered	400 ± 10 (15.75 ± 0.39) 50 (1.97) min.

Typical Functional Properties for AnodeFlex™1500 –In-Line Splice

For all test methods below, see Berry Plastics specification RUD 6056 entitled “Specification for Cap, Splice and Tee Sealing Splices for use with AnodeFlex™ 1500 Long Line Anode”.

Property	Conditions	Requirement
Internal pressure resistance	23˚C, 1 Bar, 24 h	No leakage
External pressure resistance	23˚C, 10 Bar, 24 h	No water ingress
Corrosion Resistance	23˚C	Pass
Impact	23˚C, 100 Nm, blunt blade	Pass with 25 kV
Penetration	23˚C, 72 h, needle: Diam. 1.8 mm, 2.5 kg	Pass with 25 kV

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AnodeFlex – End Cap

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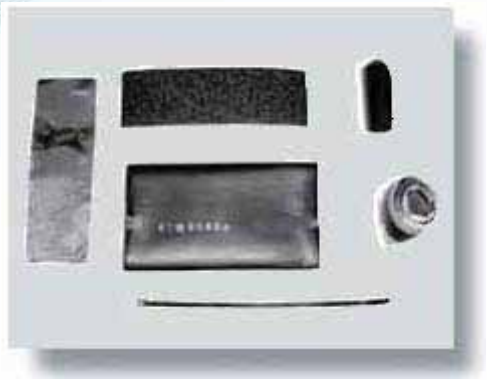
IMPRESSED CURRENT CATHODIC PROTECTION



The AnodeFlex™ 1500 End Cap Splice kit is designed to seal the exposed end of an AnodeFlex™ 1500 anode circuit.
The heat-shrinkable tubing, sealant and accessories, have been specifically designed to environmentally protect the termination in direct burial soil application uring the entire anode life.
The long term performance of AnodeFlex™1500 is conditional upon keeping the base copper conductor and electrical connections isolated from water.

Typical Kit Compenent Dimension for AnodeFlex™1500 – End Cap Splice

Description	Type dimension	Requirement in mm (In)
Abrasion paper	Width × Length	50 × 150 (1.97 × 5.90)
Tie wraps	Length	170 (6.69) min.
Aluminum tape	Width × Length	50 × 150 (1.97 × 5.90)
Sealing mastic strip	Width × Thickness × Length	50 × 3 × 250 (1.97 × 0.12 × 9.84)
End Cap	Length Inside diameter (as supplied) Inside diameter (fully recovered)	57 (2.24) min. 22 (0.87) min. 7 (0.28) max.
Heat shrinkable tublng	Length Inside diameter supplied Inside diameter recovered Wall thickness recovered	150 ± 10 (5.90 ± 0.39) 50 (1.97) min. 16 (0.63) max. 2 (0.079) min.

Typical Functional Properties for AnodeFlex™1500 – End Cap Splice

For all test methods below, see Berry Plastics specification RUD 6056 entitled Specification for Cap, Splice and Tee Sealing Splices for use with AnodeFlex™ 1500 Long Line Anode.

Property	Conditions	Requirement
Internal pressure	23°C, 1 Bar, 24 h	No leakage
External pressure resistance	23°C, 10 Bar, 24 h	No water ingress
Corrosion Resistance	23°C	Pass
Impact	23°C, 100 Nm, blunt blade	Pass with 25 kV
Penetration	23°C, 72 h, needle: Diam. 1.8 mm, 2.5 kg	Pass with 25 kV

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IMP 05-01

TRANSFORMER RECTIFIER

IMPRESSED CURRENT CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

Suitable to use various kinds of reference electrode including zinc electrode, Ag/AgCl electrode and Cu/CuSO4 electrode.

The unit's reliability and stability is significant improved by using all series of integration & modularization electronic circuit. The updated integration & modularization also simplified the operation and maintenance work of circuit.

By using the high impedance digital meters which enable the unit's input impedance reaches 5MΩ the unit's potential measurement precision is much improved.

Auto error conversion system can insure the system convert to the preset constant current status at a time of the failure of the cathodic protection system, such as the potential diversification caused by instruments, anodes, circuits, reference electrode, etc.

Overload protection, short protection circuits are configured to insure the safety of the unit. The unit is preinstalled with three sets of surge arrester (8-20 Ms) which on anode & cathode terminals 40 KA, reference electrode terminal 40 KA and AC input terminal 40KA respectively, additional surge arrestors are optional.

Single circuit board design which provide considerable advantage in repairing and maintenance.

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IMP 05-01

TRANSFORMER RECTIFIER

IMPRESSED CURRENT CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

AIR & OIL COOLED RECTIFIERS

Item/Parameter	Single Phase	Three Phase	PWM Switch	Mounted Type	Portable Type
Frequency	50Hz-60Hz	50Hz-60Hz	50Hz-60Hz	50Hz-60Hz	50Hz-60Hz
AC Input Voltage	220V	380V	220V	220V	220V
DC Output Voltage(Variable)	DC 0-50V	DC 0-100V	DC 0-50V	DC 0-50V	DC 0-50V
DC Output Current	0-50A	0-300A	0-80A	0-40A	0-20A
Current Limiting	0-30A	0-200A	0-60A	0-30A	0-15A
Set Potential	0-±3V	0-±3V	0-±3V	0-±3V	0-±3V
Constant Potential Precision	≤5mV	≤5mV	≤5mV	≤5mV	≤5mV
Constant Current Precision	≤1%	≤1%	≤1%	≤1%	≤1%
Input Impedance	>5MΩ	>5MΩ	>5MΩ	>5MΩ	>5MΩ
Ripple	≤3%	≤3%	≤3%	≤3%	≤3%
Surge Arrester	Configured	Configured	Configured	Configured	Configured
Working Style	Continuous	Continuous	Continuous	Continuous	Continuous
IP Protection(Optional)	IP54-IP66	IP54-IP66	IP54-IP66	IP54-IP66	IP54-IP66
AC Noise Immunity	≥24V	≥24V	≥24V	≥24V	≥24V
Remote Data Transmission & Remote Control	Optional	Optional	Optional	Optional	Optional
Circuit Sutructure	Modularization	Modularization	Modularization	Modularization	Modularization

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JUNCTION BOX

IMPRESSED CURRENT CATHODIC PROTECTION

KORTEK
Corrosion Technologies Co. Ltd.

APPLICATION

Junction boxes for positive and negative current distribution and control , and for resistance bonding are available to meet exact client specifications.

Suitable for onshore and marine environments in safe and hazardous areas.

When specifying a CPC Junction Box assembly please clarify specific hardware and components required.

ENCLOSURES

Stainless Steel 316L & 304,	Aluminium	Explosion Proof
Painted Mild Steel	Plastic	GRP
Galvanised and Painted	Cast Iron	Custom Finishes

Please also specify IP, NEMA or Hazardous area classification required.

ACCESSORIES

Resistors	Metering	Diodes
Shunts	Monitoring	Labelling
Support Frames	Transducers	Switches
Copper Links	Terminals	Security / Locking

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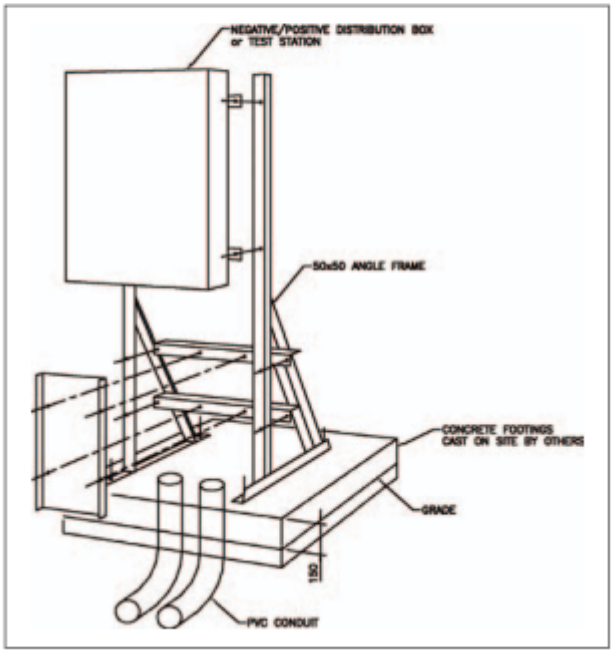
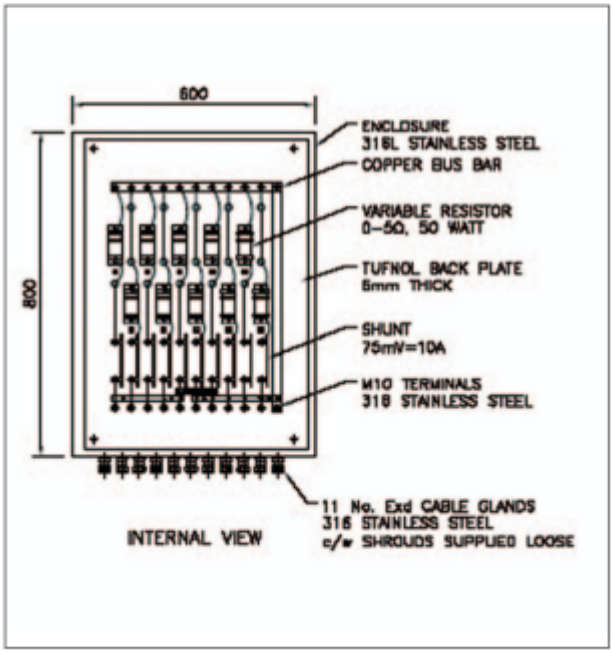
CABLE ENTRY

Cable entry can be made by any type of proprietary cable gland, or by conduit and hub assemblies allowing the safe passage of multiple cables into the enclosure.

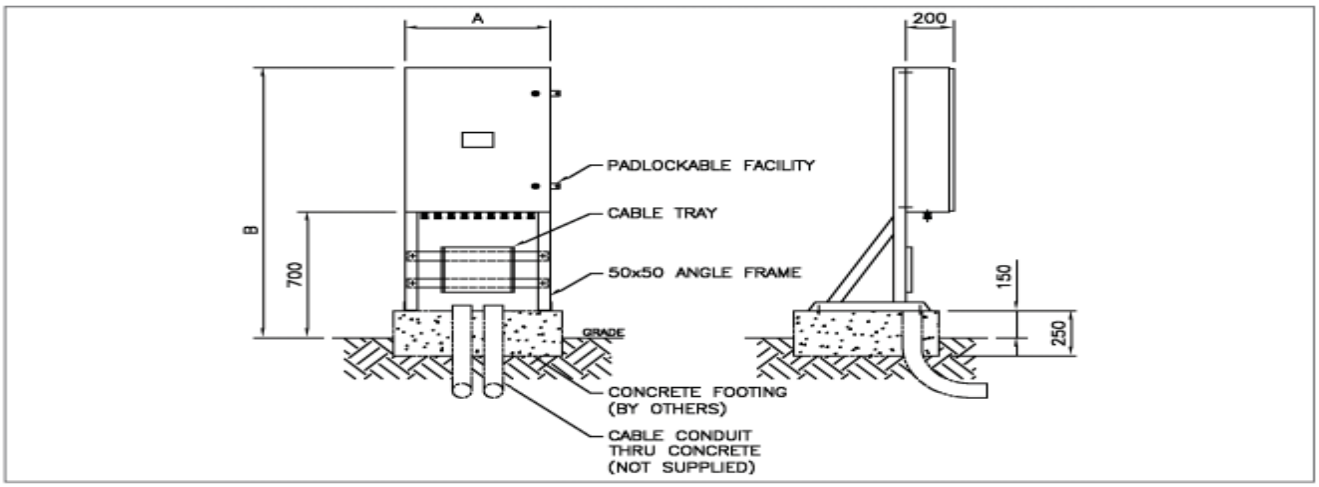
TYPICAL JUNCTION BOX ARRANGEMENT



TYPICAL INTERNAL LAYOUT OF ANODE JUNCTION BOX



TYPICAL JUNCTION BOX SUPPORT ARRANGEMENT



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XLPE/PVC (N2XY) CABLES

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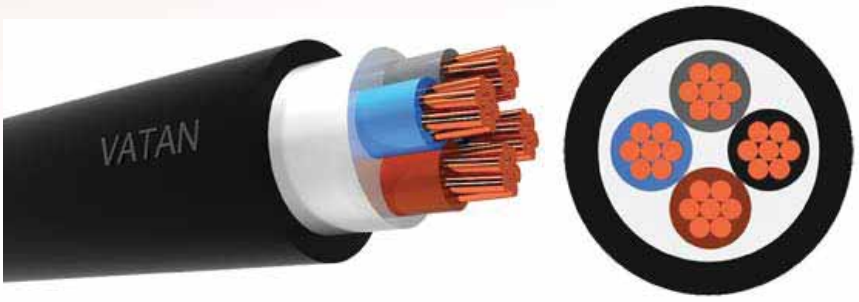
Corrosion Technologies Co. Ltd.



YXV 0.6/1kV TS IEC 60502
N2XY 0.6/1kV VDE 0276-603

Construction

1. Single or multi-core copper conductor
2. XLPE insulated
3. PVC fill
4. PVC outer sheathed

Tecnical Data

These cables are produced according to TS IEC 60502-1, IEC 60502-1 and VDE 0276-603

- Permissible operating temp.: 90°C
- Permissible short circuit temp.: 250°C (for short circuit duration up to 5 sec.)
-Test voltage (AC): 3,5 kV
-Installation temp. min: 5°C

TECHNICAL FEATURES								
Rated Cross Section	Overall Diameter of cable	Current Carrying Capacity				Conductor DC Resistance at (20°C)	Net weight	Delivery Lenght
mm²	mm	Air(A)	Ground (A)	Air(A)	Ground (A)	Ohm/Km	Kg	Mt
1 x 6 re	6,90	57	69	58	68	3,0800	94,82	1000
1 x 1.5 rm	5,80	25	33	26	33	12,1000	47,58	1000
1 x 2.5 rm	6,20	34	43	35	43	7,4100	59,60	1000
1 x 4 rm	6,80	45	56	46	55	4,6100	78,46	1000
1 x 6 rm	8,00	57	69	58	68	3,0800	110,11	1000
1 x 10 rm	8,00	78	92	80	91	1,8300	140,89	1000
1 x 16 rm	9,00	104	118	107	117	1,1500	201,63	1000
1 x 25 rm	10,10	141	152	145	151	0,7270	290,52	1000
1 x 35 rm	11,60	173	182	178	180	0,5240	394,10	1000
1 x 50 rm	12,80	213	216	220	214	0,3870	519,04	1000
1 x 70 rm	14,80	271	265	279	261	0,2680	726,53	1000
2 x 6 re	13,80	64	73	-	-	3,0800	322,11	1000
2 x 1.5 rm	11,60	29	34	-	-	12,1000	187,67	1000
2 x 2.5 rm	12,40	38	44	-	-	7,4100	225,41	1000
2 x 4 rm	13,60	50	58	-	-	4,6100	285,46	1000
2 x 6 rm	16,00	64	73	-	-	3,0800	399,74	1000
2 x 10 rm	16,00	88	98	-	-	1,8300	461,30	1000
2 x 16 rm	18,00	116	128	-	-	1,1500	631,70	1000
2 x 25 rm	20,20	154	165	-	-	0,720	870,09	1000
2 x 35 rm	23,20	190	199	-	-	0,5240	1.171,33	1000
2 x 50 rm	25,60	230	236	-	-	0,3870	1.505,96	1000
2 x 70 rm	29,40	292	292	-	-	0,2680	2.063,89	1000

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NYY CABLES

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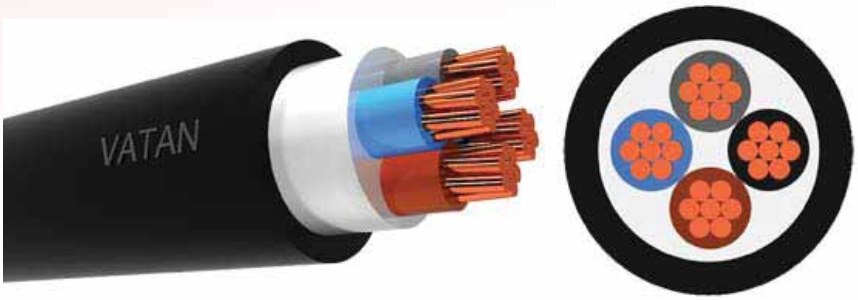

YXV 0.6/1kV TS IEC 60502
NYY 0.6/1kV VDE 0276-603

Construction

1. Single or multi-core copper conductor
2. PVC insulated
3. PVC fill
4. PVC outer sheathed

Tecnical Data

These cables are produced according to TS IEC 60502-1, IEC 60502-1 and VDE 0276-603

- Permissible operating temp.: 70°C
- Permissible short circuit temp.: 160°C (for short circuit duration up to 5 sec.)
-Test voltage (AC): 2 kV
-Installation temp. min: 5°C

TECHNICAL FEATURES

Rated Cross Section	Overall Diameter of cable	Current Carrying Capacity				Conductor DC Resistance at (20°C)	Net weight	Delivery Lenght
mm²	mm	Air(A)	Ground (A)	Air(A)	Ground (A)	Ohm/Km	Kg	Mt
1 x 6 re	7,50	46	57	48	57	3,0800	108,12	1000
1 x 1.5 rm	6,00	21	27	21	27	12,1000	52,86	1000
1 x 2.5 rm	6,40	27	35	28	35	7,4100	65,53	1000
1 x 4 rm	7,40	37	46	38	45	4,6100	92,25	1000
1 x 6 rm	8,00	46	57	48	57	3,0800	117,09	1000
1 x 10 rm	8,60	64	76	65	76	1,8300	157,55	1000
1 x 16 rm	9,60	84	98	87	97	1,1500	221,01	1000
1 x 25 rm	11,10	114	127	117	125	0,7270	322,69	1000
1 x 35 rm	12,20	140	152	144	150	0,5240	422,38	1000
1 x 50 rm	13,80	172	180	177	178	0,3870	562,74	1000
1 x 70 rm	15,60	218	220	225	218	0,2680	772,55	1000
2 x 6 re	15,00	51	59	-	-	3,0800	373,50	1000
2 x 1.5 rm	12,00	23	27	-	-	12,1000	204,98	1000
2 x 2.5 rm	12,80	30	36	-	-	7,4100	244,49	1000
2 x 4 rm	14,80	40	47	-	-	4,6100	337,47	1000
2 x 6 rm	16,00	51	59	-	-	3,0800	413,69	1000
2 x 10 rm	17,20	70	80	-	-	1,8300	523,27	1000
2 x 16 rm	19,20	93	104	-	-	1,1500	702,65	1000
2 x 25 rm	22,20	123	134	-	-	0,7270	995,68	1000
2 x 35 rm	24,40	151	162	-	-	0,5240	1.269,22	1000
2 x 50 rm	27,80	182	191	-	-	0,3870	1.683,51	1000
2 x 70 rm	31,60	230	236	-	-	0,2680	2.276,14	1000

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THERMITE WELDING

KORTEK
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The CADWELD® process is a method of making electrical connections of copper-to-copper or copper-to-steel in which no outside source of heat or power is required.

In this process, conductors are prepared, placed in a purpose-designed graphite mold, and exothermically welded to produce a permanent electrical connection.

The CADWELD exothermic process is a system.

Materials from other manufacturers should not be mixed or matched with CADWELD molds or

welding material.








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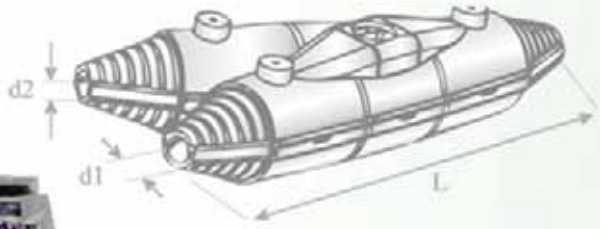
Y TYPE CABLE JOINTS



Anma Voltajı Rated Voltage	Kod Code	Kablo Çapı Diameter of Cable (mm ²)		d1 (mm)	d2 (mm)	L (mm)	Kablo Çapı Diameter of Cable (mm ²)	
		Ana Mains	Bransman Branch				Ana Mains	Bransman Branch
0.6 - 1 kV	YE1-104	1x4	1x4	10	10	194	9	9
	YE1-106	1x6	1x6-1x4	10	10	194	10	10-9
	YE1-110	1x10	1x 10-1x4	12.5	12.5-10	182	11	11-9
	YE1-116	1x16	1x16-1x4	12.5	12.5-10	182	12	12-9
	YE1-125	1x25	1x25-1x4	16	16-10	171	13	13-9
	YE1-135	1x35	1x35-1x4	16	16-10	171	14	14-9
	YE1-150	1x50	1x50-1x4	16	16-10	171	15	15-9

Application:

Y type cable joints are used for jointing power insulation connections, convenient for connection of underground, ground telecom and energy cables, Illumination park and garden, underground electrical distribution, pool, any moisture ambient and under water.

TECHNICAL DATA

Insulation Resin has two components; Freezing point can change according to weather situation. Insoluble in water
Viscosity : 4Pa.s at 25°C
Joint Hardness : 65 Shores D
Tensile Strength : 13Mpa
Elongation at Break : 30%
Appropriate voltage Range : 0.22-1kV
Electrical Insulation : Up to 5kV
Firing Point : Poliol Min. 220°C
Accordance with the physical, mechanical impact and appropriate RoHS Standard

MECHANICAL RESISTANCE

Pull : Avg. 320 kg / cm²
Pressure : Avg. 1050 kg / cm²
Bend : Avg. 520 kg / cm²
Impulse : Avg. 16, 8 kg / cm²
For armoured cable joint mounting not need armour because of high resistance of resin

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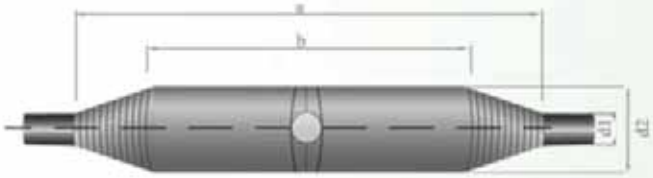
I TYPE RESIN CABLE JOINTS



Anma Voltajı Rated Voltage	Kod Code	Kablo Çapı Diameter of Cable (mm ²)		d1 (mm)	d2 (mm)	L (mm)	Kablo Çapı Diameter of Cable (mm ²)	
		Ana Mains	Bransman Branch				Ana Mains	Bransman Branch
0.6 - 1 kV	E1-410	4x10	300	118	19	51	20	E1-410
	E1-416	4x16	300	118	21	51	23	E1-416
	E1-31610	3x16+10	300	118	22	51	22	E1-31610
	E1-32516	3x25+16	300	162	24	67	25	E1-32516
	E1-425	4x25	300	162	25	67	26	E1-425
	E1-435	4x35	300	162	27	67	29	E1-435
	E1-450	4x50	300	162	30	67	33	E1-450

Application:

Straight resin cable joints are used for jointing power insulation connections, convenient for connection of underground, ground telecom and energy cables, park and garden illumination, pool, any moisture ambient and under water.

TECHNICAL DATA

Insulation Resin has two components; Freezing point can change according to weather situation. Insoluble in water
Viscosity : 4Pa.s at 25°C
Joint Hardness : 65 Shores D
Tensile Strength : 13Mpa
Elongation at Break : 30%
Appropriate voltage Range : 0.22-1kV
Electrical Insulation : Up to 5kV
Firing Point : Poliol Min. 220°C
Accordance with the physical, mechanical impact and appropriate RoHS Standard

MECHANICAL RESISTANCE

Pull : Avg. 320 kg / cm2
Pressure : Avg. 1050 kg / cm2
Bend : Avg. 520 kg / cm2
Impulse : Avg. 16, 8 kg / cm2
The excellent movement stability and credibility
Good covering cable, excellent moisture proof

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OTH 01-01

SPARK GAP

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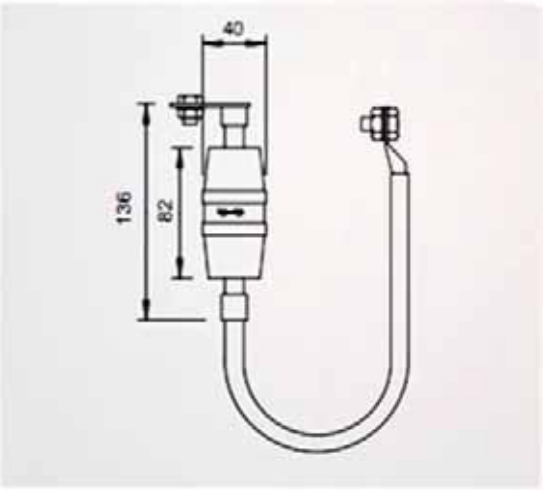
OTHER PROTECTION EQUIPMENTS



Type	Connection Cable Length		Contact Voltage	Impulse Current (10/350)	Nom. Discharge Impulse Current (8/20)	Protection Level	Temperature Range	Pack.	Weight
	ft	m	kV	kA	kA	kV	°C	pcs	kg/100 pcs
480 180	0,59	0,18	1	100	100	<3	-20 - 50	1	48
480 250	0,82	0,25	1	100	100	<3	-20 - 50	1	50
480 350	1,15	0,35	1	100	100	<3	-20 - 50	1	53

- Ex-tested to ATEX directive 94/9/EG
- Designation: Ex II 2G Eex d IIC T6
- Incl. Connector cable 25 mm2 Cu, highly-flexible, with the cable lug screw (M 10)
- Pulsed current 100 kA (10/350µs)
- BET tested

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POLARIZATION CELL REPLACEMENT

OTH-02-01

KORTEK
Corrosion Technologies Co. Ltd.

OTHER PROTECTION EQUIPMENTS

DAIRYLAND ELECTRICAL INDUSTRIES

The PCR is a solid-state device designed to simultaneously provide DC decoupling and AC continuity/grounding when used with cathodically protected structures, such as pipelines, tanks, grounding systems, and cable casings. By decoupling the cathodic protection system from grounding systems and other structures, the CP requirements can be minimized, while maintaining an effective ground or bond rated for AC faults and lightning current. All DEI devices are maintenance-free, with no requirements for periodic service or testing.

Features:

- Fail-safe design assures bonding/grounding
- Certified for hazardous locations, electrical grounding
- Higher blocking voltage than polarization cells
- Inherent over-voltage protection provided to structure
- No maintenance or testing required

Typical Applications:

- Insulated Joint Protection
- AC Voltage Mitigation
- Decoupling Electric Equipment Grounding Systems
- Decoupling From Utility Grounding Systems

Why Fault Current Is Important:

Fault current exposure for the product relates to the ampacity, proximity and mode of current transfer from a faulting source (power transmission line, motor circuit, induction from overhead lines, etc.). Select a product rating that has reasonable margin above the site conditions. Contact DEI for any assistance with selection of appropriate ratings.

Other Ratings and Certifications:

Threshold Voltage (absolute)

-3/+1V (standard) -4/+1V (optional)
-2/+2V (optional) -6/+1V (optional)

AC Steady-State Current (amperes - rms) 50/60Hz
45A (standard) 80A (optional)

Lightning Surge Current
100kA crest (8 x 20 µs waveform)

Environmental rating:
NEMA 4X: Rain-proof
NEMA 6P: Submersible
(Standard) (Optional)

Hazardous Location Certifications:

Rating	Certification Agency
Class I, Division 2, Groups A, B, C, DTemp Code T5	UL, C-UL
Zone 2 - ATEX Directive, Groups IITemp Code T5	Demko/UL

Certification Agencies:
Underwriter's Laboratories (UL, C-UL)
Demko, CE Mark
For model numbers, options and accessories, see full technical literature at www.dairyland.com

AC Fault Current Ratings (Amps AC-RMS Symmetrical)		
PCR Model	Rating at 30 cycles 60 Hz	50 Hz
PCR-3.7KA	3,700	3,500
PCR-5KA	5,000	5,000
PCR-10KA	10,000	9,000
PCR-15KA	15,000	14,000
Note: 60 Hz models shown. For other models and options available, please visit www.dairyland.com		

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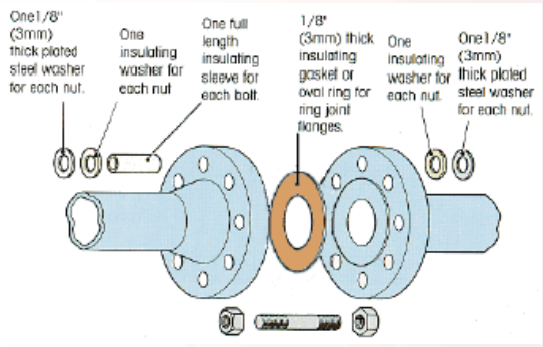
FLANGE ISOLATION SETS

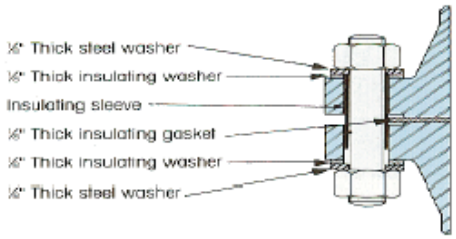
KORTEK
Corrosion Technologies Co. Ltd.

OTHER PROTECTION EQUIPMENTS

SPIRA POWER
Gasket Manufacturing LLC

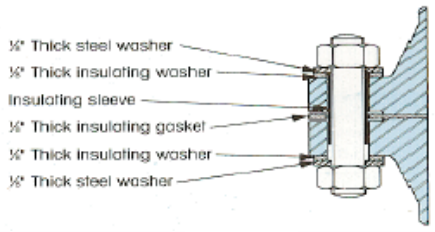
The most common styles are Type ‘F’, which incorporates the use of an IBC gasket, Type ‘E’, which incorporates the use of a Full Face gasket, and Type ‘D’ which incorporates a Ring Type Joint as the insulating gasket.





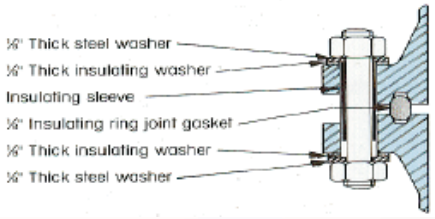
TYPE ‘F’

The cross sectional diagram here shows how the insulation set is assembled when using an IBC style gasket insert. You can see very clearly how the opposite flanges are totally insulated from one another.



TYPE ‘E’

The cross sectional diagram here shows how the insulation set is assembled when using a full face gasket insert. Once again it is very clear to see that the flanges are totally insulated from one another.



TYPE ‘D’

The cross sectional diagram here shows how the insulation set is assembled when using a Phenolic Ring Type Joint as the gasket. The oval section ring joint will fit into a standard RTJ flange ring groove.

The insulation set consists of:
One reinforced phenolic gasket, or phenolic RTJ.
One MYLAR or Phenolic sleeve per bolt.
Two reinforced phenolic washers per bolt.
Two Zinc Plated mild steel washers per bolt.
Variations of alternative materials for the gasket or sleeves can be supplied if requested.

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TST 01-01

STEEL TEST POST

KORTEK
Corrosion Technologies Co. Ltd.

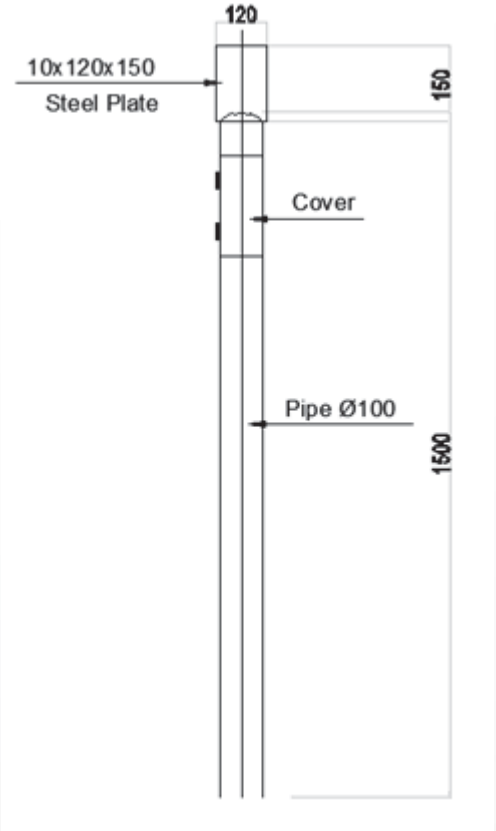
TEST & INSPECTION
SURVEY & EQUIPMENT

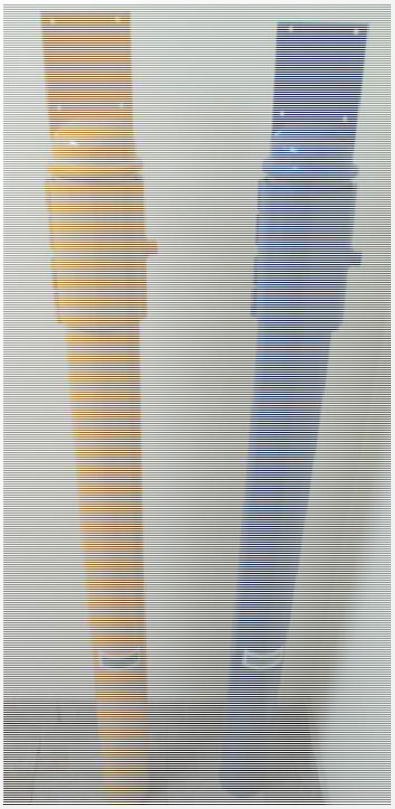
APPLICATION

A permanent durable steel test station used for the measurement of pipe to soil potentials, current flow, testing of insulated flanges, resistance bonds, anode outputs etc.

STEEL TEST STATION DATA

Length:	1,5” dia. X 6” long space-age ceramic tube with yellow protective caps.
Diameter:	50’ OF #14 RHH-RHW yellow
Wall Thickness:	+/- 5 milivolts with 3,0 microamp load
Terminals	32 ºF to 135 ºF (0ºC to 57,2ºC)
Finish:	Hot Dip Galvanised Powder Coat Painted





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BigFink TEST POST

KORTEK
Corrosion Technologies Co. Ltd.

TEST & INSPECTION
SURVEY & EQUIPMENT

APPLICATION

CP Test Station:

Cap, Terminal Board and Collect Nut made from Makrolon® polycarbonate. One of the toughest plastics in the world.

Hardware:

Standard nickel plated brass or optional stainless steel for guaranteed long service life. Up to 11 terminals accessible from both sides of the board.

Accessories:

All BigFink® terminal boards can accommodate COTTShunts®, Slide Resistors, COTTMeters® (Volt or Amp) Burndy connectors, Cott bonding/shorting straps, Banana Jacks, ZAPGard® , locking devices, lightning arrestors and flange mounting brackets.

Colors:

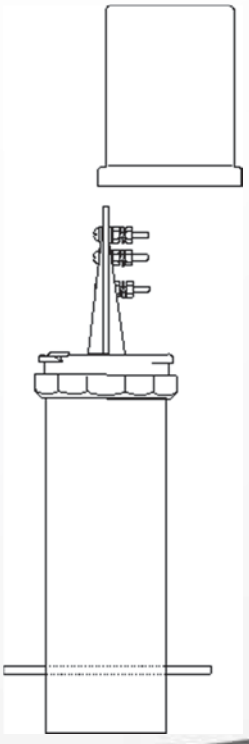
Red, Orange, Yellow, Green, Blue, White and Black are standard on BigFink® and COTTPipe®. Any color is available as an option.

Support Post:

COTTPipe® PE (standard) polyethylene has over 20 years of proven durability. COTTPipe® PC (optional) polycarbonate is available for the toughest applications. Standard length 6 feet, available to 40 feet.

Sizes:

Available in models to fit 1-1/4", 2" and 3" pipe
Anchor
COTTPipe® PE is easily installed and prevents pullout.



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CORROSION COUPON

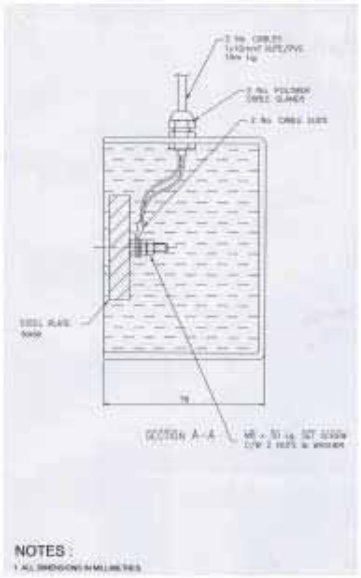
TEST & INSPECTION SURVEY EQUIPMENT

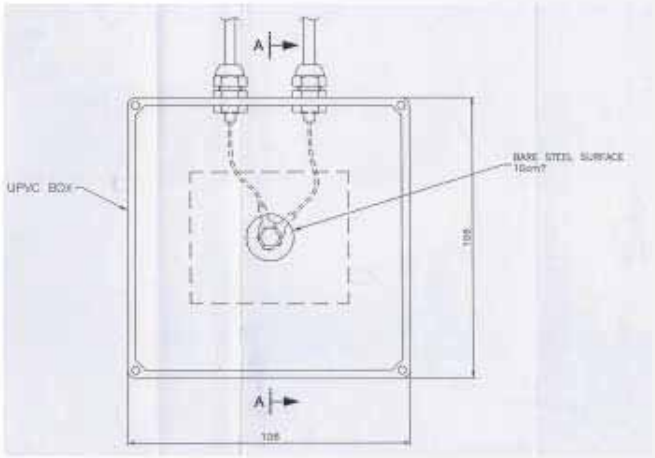
KORTEK
Corrosion Technologies Co. Ltd.

APPLICATION

Onshore pipelines and plant coupons are used to simulate pipeline coating defects and will provide an accurate indication as to whether Cathodic Protection is being achieved.

CORROSION COUPON DATA	
Enclosure	uPVC box 106mm x 106mm x 78mm
Coupon:	Circular Plate 50mm Dia Grade X65 (or to client specification)
Coupon surface area:	2500mm^2 (or to client specification)
Encapsulation:	2 Pack epoxy resin
Cables:	2 No. or 1 No. standard comer conductor 1x10mm^2 XLPE/PVC (Red/Blue), 600/1000V grade 10m long (or to client specification)
Cable glands:	2 No. or 1 No. Polyamide cable glands
Connection:	M8 x 30 c/w 2No nuts, washers & spring water
Terminations:	2 No. or 1 No. M8 x 10mm^2 compression lugs





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Permanent $Cu/CuSO_4$ Reference Electrode

KORTEK
Corrosion Technologies Co. Ltd.

TEST & INSPECTION
SURVEY & EQUIPMENT

APPLICATION

The RefineTM $Cu/CuSO_4$ "Side-SensorTM" is the most advanced under tank cell available on the market today and the result of 60 years of experience and many thousand of hours of testing, research and development. Our unique side reading body, ion trap and element design combine to give market leading accuracy, stability and performance levels. These cells are ideal for direct installation into soil, sand or cement and will provide superb performance without the need for pre-packaging backfill materials.

Can be purchased with either standard cable tails, your choice of cable or a self assembly version for your convenience.

Materials Specification :	
Electrode Element	High conductivity copper to HD HC C101 to BS EN 133 /62
Electrode Media	Specifically formulated CuSO4 matrix
Body	Sintered porous uHMWPE bonded to a formulated membrane liner
Performance Details :	
Operating Life	25 years minimum, with correct handling prior to installation
Shelf Life	Indefinite, under correct storage conditions
Stability	± 5 mV at 5 microamps
Temperature Range	0 - 75 ºC (32 – 167 ºF)

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Permanent $Cu/CuSO_4$ Reference Electrode (Packaged)

KORTEK
Corrosion Technologies Co. Ltd.

APPLICATION

This permanent reference electrode is used to measure CP potentials on buried pipelines, storage tanks and other buried metallic structures to which CP has been applied.

COPPER COPPER SULPHATE REFERENCE ELECTRODE DATA

Cell Type:	Permanent Buried $Cu/CuSO_4$
Casing:	Porous Ceramic Pot
Electrolyte:	Saturated Copper Sulphate Crystals
Packaging:	Cotton Bag
Backfill:	75% Gypsum / 20% Bentonite / 5% Sodium Sulphate (or to suit client specification)
Weight (Gross):	Approx. 25 kgs.
Dimensions:	~120 mm x 300 mm (Bare Dimensions) ~200 mm x 410 mm (Packaged Dimensions)

CABLE DATA

Cable:	1x10 mm^2 XLPE/PVC stranded copper conductor cable, 600/1000V grade. Colour Black (or to meet client specification)
Cable Length:	10 m. (or to meet client specification)

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Permanent Cu/$CuSO_4$ Reference Electrode (AccuRef 30)

TEST & INSPECTION SURVEY EQUIPMENT

KORTEK
Engineering & Consultancy Co. Ltd.

AccuRef 30 Permanent Cu/$CuSO_4$ Reference Electrode

Features & Benefits:

- Electrodes are buried directly with native soil backfill – no need for composite backfills. Note: These products are suitable for use in neutral soil having a chloride ion content <500ppm. [AccuRef Silver/Silver Chloride electrodes are recommended for use in higher chloride ion content soils]
- Depressed electrolyte freezing temperature of -20°C allows electrodes to experience a deep frost without freezing and cracking.
- Design life of 30 years.
- Large electrical contact area (electrically active surface area) having hygroscopic characteristics promotes good electrode-to-soil electrical contact. [Note: Soil moisture content is a requirement for a buried metallic structure potential reading versus any permanently installed reference electrode, which means that readings in ultra-dry soil are not possible]

Specifications:

- Sealed cable type/length (standard): 25 feet of #12 AWG stranded copper wire coated with XLP (USE-2/RHH/RHW-2) insulation; 600V rating, 90°C max. temp. in wet & dry environments
- Active electrical contact surface area: approx.. 16..4 inches²
- Half-cell materials: 99.99% copper and saturated copper sulfate gel electrolyte
- Max. diameter: 2.77 inches, Overall length (not including sealed cable): 15 inches, Weight (including sealed cable): 3.9 lbs

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Permanent Ag/AgCl Reference Electrode

KORTEK
Corrosion Technologies Co. Ltd.

APPLICATION

The RefineTM Ag/AgCl "Side-SensorTM" is the most advanced under tank cell available on the market today and the result of 60 years of experience and many thousand of hours of testing, research and development. Our unique side reading body, ion trap and element design combine to give market leading accuracy, stability and performance levels. These cells are ideal for direct installation into soil, sand or cement and will provide superb performance without the need for pre-packaging backfill materials.

Can be purchased with either standard cable tails, your choice of cable or a self assembly version for your convenience.

Materials Specification :	
Electrode Element	99.9 % pure silver
Electrode Media	Specifically formulated Ag/AgCl matrix
Body	Sintered porous uHMWPE bonded to a formulated membrane liner
Performance Details :	
Operating Life	25 years minimum, with correct handling prior to installation
Shelf Life	Indefinite, under correct storage conditions
Stability	± 5 mV at 5 microamps
Temperature Range	0 - 75 ºC (32 – 167 ºF)

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Portable Ag/AgCl Reference Electrode

KORTEK
Corrosion Technologies Co. Ltd.

TEST & INSPECTION
SURVEY & EQUIPMENT

APPLICATION

The RefineTM Ag/AgCl Portable Reference Electrode is a perfect companion for offshore, jetty and harbour inspection work where you need a reliable, cost effective reference cell in your tool kit. Provided with UV protection sheath whilst cell is not in use. The RefineTM Ag/AgCl Portable Reference Electrode is a long life reference cell designed for offshore, jetty and harbour inspection work. Our sintered element design ensures long life, stability and accuracy.

Materials Specification :	
Electrode Element	99.9 % pure silver
Electrode Media	Specifically formulated Ag/AgCl matrix
Body	End cap: acetal homopolymer Tubular element container: thermoplastic polycarbonate resin
Performance Details :	
Operating Life	25 years minimum, with correct handling prior to installation
Shelf Life	Indefinite, under correct storage conditions
Stability	± 5 mV at 5 microamps
Temperature Range	0 - 75 ºC (32 – 167 ºF)
Dimensional Data :	
Electrode Body Diameter	36 mm (1.4”)
Electrode Body Length	180 mm (7”)
Nominal Weight	300 grammes (10.5 oz) without cable tail

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Cu/$CuSO_4$ Reference Electrodes

KORTEK
Corrosion Technologies Co. Ltd.

TEST & INSPECTION
SURVEY & EQUIPMENT

All copper sulfate electrodes are shipped dry but include a charge of high-purity copper sulfate crystals. A protective cap for the CPT porous plug is also supplied. Special lengths of RE-5 and RE-5C are available on special order. Use and maintenance instructions are furnished with each electrode.

Model RE-5

Standard Model. Flat CPT Porous Plug, for general use in soil. Approximate overall Size: 1 3/8" dia. x 6" long. Dry weight: 4oz.

Model RE-5C

Similar to Model RE-5 except supplied with a cone-shaped CPT porous plug. For use in soft soils. Provides lower contact resistance. When pushed into soft soils, the shape of the plug helps the electrode to "stand up." Approximate overall size: 1 3/8" dia. X 6 3/4" long. Dry weight: 5 oz.

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KORTEK
Corrosion Technologies Co. Ltd.

TEST & INSPECTION SURVEY & EQUIPMENT

FLUKE

General Informations:

Compact true-rms meter for field service technicians

The Fluke 115 is the solution for a wide variety of electrical and electronic testing applications. This true-rms meter provides easy one-handed operation in a compact package.

Features include:

- Resistance, continuity, frequency, capacitance, and diode test
- Measures 10 A (20 A overload for 30 seconds)
- Large white LED backlight to work in poorly lit areas
- Compact ergonomic design for one-handed operation
- Compatible with optional magnetic hanger (ToolPak™)
- True-rms for accurate measurements on non-linear loads
- Min/Max/Average with elapsed time to record signal fluctuations
- CAT III 600 V safety rated

General specifications

Accuracy is specified for 1 year after calibration, at operating temperatures of 18 °C to 28 °C, with relative humidity at 0 % to 90 %.
The accuracy specifications take the form of:
± ([% of reading] + [counts])

Maximum voltage between any terminal and earth ground	600 V
Surge protection	6 kV peak per IEC 61010-1 600 V CAT III, Pollution Degree 2
Fuse for A input	11 A, 1000 V FAST Fuse (Fluke PN 803293)
Display	Digital: 6,000 counts, updates 4/sec
Bar graph	33 segments, updates 32/sec
Operating temperature	-10 °C to + 50 °C
Storage temperature	-40 °C to + 60 °C
Battery	9 volt Alkaline, NEDA 1604A/ IEC 6LR61
Battery life	400 hours typical, without backlight

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TEST & INSPECTION SURVEY EQUIPMENT

FLUKE

Accuracy specifications

Measurement	Range	Resolution	Accuracy ± ([% of reading] + [counts])
DC millivolts	600.0 mV	0.1 mV	0.5 % + 2
DC volts	6.000 V	0.001 V	0.5 % + 2
	60.00 V	0.01 V	
	600.0 V	0.1 V	
Auto volts	600.0 V	0.1 V	2.0 % + 3 (dc, 45 Hz to 500 Hz) 4.0 % + 3 (500 Hz to 1 kHz)
AC millivolts[1] true-rms	600.0 mV	0.1 mV	1.0 % + 3 (dc, 45 Hz to 500 Hz) 2.0 % + 3 (500 Hz to 1 kHz)
AC volts[1] true-rms	6.000 V	0.001 V	1.0 % + 3 (45 Hz to 500 Hz) 2.0 % + 3 (500 Hz to 1 kHz)
	60.00 V	0.01 V	
	600.0 V	0.1 V	
Continuity	600 Ω	1 Ω	Beeper on < 20 off > 250 ; detects opens or shorts of 500 µs or longer.
Ohms	600.0 Ω	0.1 Ω	0.9 % + 2
	6.000 kΩ	0.001 kΩ	0.9 % + 1
	60.00 kΩ	0.01 kΩ	
	600.0 kΩ	0.1 kΩ	
	6.000 MΩ	0.001 MΩ	
	40.00 MΩ	0.01 MΩ	5 % + 2
Diode test	2.000 V	0.001 V	0.9 % + 2
Capacitance	1000 nF	1 nF	1.9 % + 2
	10.00 µF	0.01 µF	
	100.0 µF	0.1 µF	
	9999 µF	1 µF	
	100 µF to 1000 µF		1.9 % + 2
	> 1000 µF		5 % + 20
Lo-Z capacitance	1 nF to 500 µF		10 % + 2 typical
AC amps true-rms (45 Hz to 500 Hz)	6.000 A	0.001 A	1.5 % + 3
	10.00 A	0.01 A	
	20 A overload for 30 seconds max.		
DC amps	6.000 A	0.001 A	1.0 % + 3
	10.00 A	0.01 A	
	20 A overload for 30 seconds max.		
Hz (V or A input)[2]	99.99 Hz	0.01 Hz	0.1 % + 2
	999.9 Hz	0.1 Hz	
	9.999 kHz	0.001 kHz	
	50.00 kHz	0.01 kHz	

Notes:

1 - All ac voltage ranges are specified from 1 % to 100 % of range. Because inputs below 1 % of range are not specified, it is normal for this and other true-rms meters to display non-zero readings when the test leads are disconnected from a circuit or are shorted together. For volts, crest factor of ≤ 3 at 4000 counts, decreasing linearly to 1.5 at full scale. AC volts is ac coupled and ac mV is dc coupled.

2 - Frequency is ac coupled, 5 Hz to 50 kHz for ac voltage. Frequency is dc coupled, 45 Hz to 5 kHz for ac current.

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TST-08-01

Multimeter B-3D

KORTEK
Corrosion Technologies Co. Ltd.

TEST & INSPECTION EQUIPMENT
SURVEY

General Information:

RIGHT METER: Selectable Input Resistance of 10, 25, 50,100 & 200 megohms on all ranges from 200 MV to 200 V; 20 MV ranges fixed at 1000 Ω

LEFT METER: 10 Megohms input Resistance on all ranges from 200 MV to 20 V: 20 MV range fixed at 1000 0

RFI REJECTION: A major design achievement was to eliminate the effects of RFI, and offer accurate, repeatable readings.

LOGIC: C-MOS LSI; crystal controlled timing.

ACREJECTION: Normal

Mode 50/60/400 Hz greater than 60 dB

ZERO: Automatic

POLARITY: Automatic (negative symbol displayed, positive assumed).

DECIMAL POINT: Automatic

BATTERY LIFE: Amplifiers approx 150 hours continuous. Low battery voltage indication incorporated into display. Others batteries have life dependent upon use.

BATTERY TYPES: Only standard batteries used: D-size, Penlight & 9V.

ACCURACY: DC 1% of reading ±1 digit; AC 2% reading ±1 digit.

Specifications:

RIGHT METER:
Liquid Crystal Display with five DC ranges from 20 MV to 200 V and selectable input resistances of 1to 200 Megohms 1AC range 200 V.

SELECTABLE INPUT RESISTANCE:
RIGHT METER input resistance of 10, 25, 50, 100 & 200 megohms selectable by rotary switch.applicable to 200 MV, 2 V and 200 V ranges. High input resistance permits accurate voltage measurement if there is high resistance in the external circuit. This is an important factor in structure to earth potentials,
where readings errors can be costly. The 20 MV range has a fixed input resistance of 1000 Ohms.

LEFT METER:
Liquid Crystal Display with 4 ranges from 20 MV to 20 V. Milliameter/ammeter with 4 ranges from 20 MA to 20 A (20 MV drop shunts). Three direct readings ohmmeter ranges: 20 Ohms, 2k Ohms, 2M Ohms.

DC BIAS:
A DC Bias circuit is connected in series with the RIGHT METER and can be used to balance out galvanic and earth potentials. A biasing potential of full scale (+ or -) on any range permits direct measurements of either positive or negative changes in potential. A panel-mounted light is activated as a reminder if the DC Bias circuit is turned on.

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Multimeter B-3D

KORTEK
Corrosion Technologies Co. Ltd.

AMMETER:

LEFT METER can serve as a milliameter /ammeter with built-in shunts to provide a wide selection of ranges. Toggle switch permits the left meter to be used as a conventional ammeter, a zero resistance ammeter, or to connect the rheostat and controls in the circuit to adjust current to a desired value for various tests. Current from a few milliamperes to about 5 amperes, supplied from either internal batteries or an external source, can be adjusted with the controls. Used for current requirement tests, soil resistivity tests, etc. A second toggle switch connects the right meter to the left hand terminals for resistance testing. The left meter can be used with batteries and controls to measure current while the right meter is being used to measure IR drop. This facilitates making "Null-Amp" type current measurements.

OHMMETER:

Three built-in ohms ranges,
Used to determine when good
low-resistance contacts are obtained. Circuit can also be used for checking continuity of test leads, resistance of bond wires, etc.

OVERLOAD PROTECTION:

Advanced design features virtually eliminate the chance of damage to either meter from electrical overload on all volt and millivolt ranges, even the 20 MV range. Tests indicate that the B-3D will withstand AC or DC voltages far in excess of any encountered in normal field testing.
Ammeter shunts are not protected by the amplifier and are subject to the damage by current overloads.

DISPLAYS:

Liquid crystal displays are special high temperature type (18°F to 176°F or 14°C to 80°C) built to rigid M.C. Miller specifications. Large display characters (3/4") facilitate rapid, accurate readings. Built -in annunciators to reduce errors in recordings readings: V, MV, A, MA 0, MO, LoBat, AC. Excellent visibility in bright sunlight. Damaged displays can be economically replaced in the field without special tools.

SHUNTS:

Built-in multi-range ammeter shunt provide high overload capacity and a high degree of accuracy. Optional accessory external shunt can extend range of current measurements to 100 amperes, and may be used on either side.

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4. ONGOING & COMPLETED CP PROJECT LIST

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REFERENCES

EMPLOYER ADMINISTRATION	TYPE	PLACE	DATE OF CONTRACT	DATE OF COMPLETION
TOROS GÜBRE SAMSUN Tel: 0 212 357 02 02	Samsun Port Galvanic Cathodic Protection System	Samsun TURKEY	10.06.2019	
NİMTAŞ LTD. ŞTİ. Tel: 0 236 214 04 20	Maski - Gürle Water Conveyance Pipeline Cathodic Protection System	Manisa TURKEY	24.05.2019	
GEBZE İZMİR OTOYOLU İŞLETME ve BAKIM A.Ş. Tel: 0 224 600 77 50	Osmangazi Bridge Cathodic Protectıın Survey	Gebze TURKEY	2.05.2019	
BOTAS INTERNATIONAL LIMITED TURKEY Tel: 0 322 355 17 87	BTC Pipeline Turkey Part 1071 km Cathodic Protection System Repair Works	Ardahan - Kars - Erzurum - Sivas - K.Maraş - Adana TURKEY	22.04.2019	
ES GROUP Tel: 0 232 600 00 60	Petkim İskele-3 Galvanic Cathodic Protection System Design	Aliağa TÜRKİYE	14.03.2019	
VEMAK İNŞAAT A.Ş. Tel: 0 312 427 78 53-54	Turkish Stream Land Part 2 Phase 2-1 Natural Gas Pipeline Cathodic Protection System	Thrace TURKEY	28.02.2019	
ACD İNŞAAT TİC. LTD. ŞTİ. Tel: 0 312 473 41 81	Turkish Stream Land Part 2 Phase 2-2 Natural Gas Pipeline Cathodic Protection System	Thrace TURKEY	27.02.2019	
ÇİMTAŞ GEMİ İNŞA SAN. VE TİC.A.Ş. Tel: 0 262 341 42 82 - 6601	North Marmara Offshore Project - Cathodic Protection Works	Kocaeli TURKEY	22.01.2019	
DEHATECH MAKİNE SAN. ve TİC. A.Ş. Tel: 0 212 252 48 00	Garri 3 Project - Aboveground Storage Tanks - Cathodic Protection System	SUDAN	15.01.2019	
RUBİS TERMİNAL PETROL TİC. Ve SAN. A.Ş. Tel: 0 212 403 51 00	Rubis Terminal - Cathodic Protection Works	Hatay TURKEY	3.01.2019	
MAPA İNŞAAT ve TİCARET A.Ş. Tel: 0 312 436 30 00	Wadi Arab Water System Construction Cathodic Protection System	JORDAN	29.11.2018	
TRANS ADRIATIC PIPELINE AG TEL: 00 355 44 306 937	TAP Pipeline Albania-Section 4B DCVG Survey	Tirana ALBANIA	5.06.2018	
BOTAS INTERNATIONAL LIMITED TURKEY Tel: 0 322 355 17 87	DCVG Survey Procurement	Ardahan - Kars - Erzurum - Sivas - K.Maraş - Adana TURKEY	1.06.2018	
SİGMA-YDA-MAKIMSAN-BURKAY İŞ ORTAKLIĞI TEL:00 90 0312 436 10	Afyon-İzmir Rapid Train Project Afyon natural gas pipeline Displacement Cathodic Protection	Afyon TÜRKİYE	15.05.2018	
BORHAT İNŞAAT TİCARET LTD ŞTİ TEL:00 90 312.4363842	Adnan Menderes Airport Fuel Pipeline cathodic protection facility	İzmir TÜRKİYE	10.05.2018	
JOINT VENTURE AZFEN GEORGIAN BRANCH Tel: 00 99 577176260	WREP SR Project Cathodic Protection System	GEORGIA	28.12.2017	13.12.2017
Çalık Enerji A.Ş. Tel: 0 312 207 73 01	TURAKURGAN field erected tanks cathodic protection system	UZBEKISTAN	27.10.2017	
TEKFEN İNŞAAT VE TESİSAT A.Ş. Tel: 00 90 212 359 35 00	TANAP Compressor Stations Cathodic Protection Services	Eskişehir TURKEY	17.04.2017	
Çalık Enerji A.Ş. Tel: 0 312 207 73 01	MARY 1574 MW Combined Cycle Plant Design and Installation of Cathodic Protection System	TURKMENISTAN	14.04.2017	15.03.2018

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MAPA INSAAT VE TICARET A.S.	SHUQAIQ WATER TRANSMISSION SYSTEM PHASE	SAUDI ARABIA	10.02.2017	15.03.2017
J&P-AVAX S.A. Tel: 0030 210 6375402	Baghdad Electrical Power Station Besmaya Iraq Phase 2 Cathodic Protection System	Besmaya IRAQ	27.12.2016	11.08.2017
Punj Lloyd - Limak - Kalyon JV Tel: 0 312 472 42 79	TANAP Lot4 Cathodic Protection Services	Eskişehir - Bursa TURKEY	20.10.2016	20.12.2018
FERNAS İNŞAAT A.Ş. Tel: 00 90 312 426 62 62	TANAP Lot 1 - Cathodic Protection Services	Erzurum - Kars TURKEY	18.12.2015	30.11.2017
Deep Denizcilik Etüd Proje İnşaat Ltd. Şti. Tel: 00 90 216 411 77 66	BTC Pipeline Ceyhan Marine Terminal Supervision of Cathodic Protection Damages	Ceyhan Adana TURKEY	17.11.2015	21.12.2015
GÜNSAYIL İNŞ. TİC. Ve SAN. LTD. ŞTİ. Tel: 00 90 312 447 91 50	APC JBC Pipeline Project – Cathodic Protection System	JORDAN	7.10.2015	1.06.2016
Sicim-Yüksel-Accord Joint Venture Tel: 00 90 312 284 25 45	TANAP Lot 2 - Cathodic Protection Services	Sivas - Erzincan TURKEY	14.08.2015	30.11.2017
ENKA İNŞAAT VE SANAYİ A.Ş. Tel: 0.212.376.10.00	Besmaya Combined Cycle Power Plant Cathodic Protection System	IRAQ	6.08.2015	4.05.2017
TEKFEN İNŞAAT VE TESİSAT A.Ş. Tel: 00 90 212 359 35 00	TANAP Lot 3 - Installation of FoC Ducts & Chambers	Yozgat - Polatlı TURKEY	1.08.2015	30.11.2017
TEKFEN İNŞAAT VE TESİSAT A.Ş. Tel: 00 90 212 359 35 00	TANAP Lot 3 - Cathodic Protection Services	Yozgat - Polatlı TURKEY	1.08.2015	30.11.2017
Sega İnşaat San. Ve Tic. Ltd. Şti. Tel: 00 90 216 467 15 72	TPAO Değirmenköy Natural Gas Storage Cathodic Protection System	Çorlu TURKEY	22.06.2015	22.06.2015
ENKA TEKNİK GENEL MÜTEAHHİTLİK A.Ş. Tel: 00 90 212 274 18 00	Iraq PS-1 Project Crude Oil Drainage Cathodic Protection Project, Procurement Installation and Commissioning	IRAQ	22.05.2015	22.05.2015
BEKTAŞOĞLU-KULAK (BK) ADİ ORTAKLIĞI Tel: 0 324 233 53 55	Mersin International Port (MIP) Cathodic Protection System	Mersin TURKEY	4.05.2015	15.01.2017
Marintaş Deniz Yapı San. Ve Tic. A.Ş. Tel: 00 90 232 422 35 48	Bodrum-Güllük Yacht Approaching Area Project Cathodic Protection Project, Procurement Installation and Commissioning	Bodrum TURKEY	16.03.2015	24.06.2015
NFB Mühendislik Müşavirlik İnşaat Tur. Ve Bilişim San. Tic. Ltd. Şti. Tel: 00 90 312 221 10 41	DSI The Beydağ Dam Additional Water Supply Transmission Line Steel Pipeline Cathodic Protection Project, reports, preparation of Terms of jobs and Cost Estimate	TURKEY	4.03.2015	2.09.2015
Enka İnşaat ve San. A.Ş. Tel: 00 90 212 376 17 76	Bazyan Power Plant Cathodic Protection System	IRAQ	28.11.2014	31.01.2017
Çalık Enerji A.Ş. Tel: 0 312 207 73 01	Khoms Power Plant Aboveground Storage Tank Cathodic Protection System	LIBYA	20.11.2014	25.12.2017

Egemer Elektrik Üretim A.Ş. Tel: 0 212 249 82 82	Erzin Natural Gas Combined Cycle Power Plant of 380 kV Transmission Line Crossing MSB ANT and BOTAS Pipeline AC Induction Removal System	Erzin - TURKEY	17.11.2014	8.05.2015
BOTAŞ INTERNATIONAL LİMİTED Tel: 0 322 355 17 00	Ceyhan Terminali Anode Bed System Renewing	Ceyhan - TURKEY	13.11.2014	31.12.2014
Çalık Enerji A.Ş. Tel: 0 312 207 73 00	Derweze Cathodic Protection System	TURKMENISTAN	27.10.2014	1.06.2015
Çalık Enerji A.Ş. Tel: 0 312 207 73 01	Gardabani Combined Cycle Power Plant Complete Cathodic Protection System	GEORGIA	15.09.2014	16.03.2015
Enka Teknik General Contracting Maintenance Operation and Management Inc. Tel: +90.212. 274 18 00	Obari 4x160 MW Gas Turbine Power Plant Complete Cathodic Protection System	LIBYA	2.07.2014	14.11.2014
China Petroleum Pipeline Material & Equipment Corp. / LukOil Tel: +86 316 207 42 01	Well Pads and Oil Gathering System at West Qurna Complete Cathodic Protection System	IRAQ	1.07.2014	6.06.2016
AsyaPort Liman A.Ş. AsyaPort Container Terminal Tel: +90 282 283 46 00	External Cathodic Protection of Jetty Piles	Tekirdağ TURKEY	2.06.2014	21.02.2018
Çalık Enerji A.Ş. Tel: +90 312 207 73 01	252,2 MW Ahal-2 Simple Cycle Gas Turbine Power Plant Complete Cathodic Protection System	TURKMENISTAN	27.05.2014	9.12.2014
Çalık Enerji A.Ş. Tel: +90 312 207 73 01	LM6000 Project (Ahal, Lebap, Mary) Power Plant Complete Cathodic Protection System	TURKMENISTAN	2.10.2013	7.11.2014
BECHTEL INTERNATIONAL INC. TURKEY BRANCH Tanap Project Office Tel: 0.312.248.82.74	Trans Anatolian Natural Gas Pipeline Project (TANAP) Cathodic Protection System	TURKEY	30.10.2013	15.01.2014
ENKA TEKNİK GENEL MÜTEAHHİTLİK A.Ş. Tel: 0.212.274.18.00	Najybia 4x125 MW Natural Gas Energy Santral Cathodic Protection System	IRAQ	10.10.2013	15.06.2014
VENTECH CONSTRUCTION & INSTALLATION CO. Tel: 0.312.285.41.00	Taq Taq Central Processing Facilities Phase II Complete Cathodic Protection System	Erbil IRAQ	1.06.2013	15.03.2014
ENKA İNŞAAT VE SANAYİ A.Ş. Tel: 0.212.376.10.00	West-Qurna-2 Enerji Santrali Projesi Komple Katodik Koruma Sistemi	Basra IRAQ	6.12.2012	10.01.2014
CHINA TIANCHEN ENGINEERING CO. Tel: 00 86 22 2340 6881	Tuz Gölü Underground Natural Gas Storage Facility Cathodic Protection System	AKSARAY	10.11.2012	31.05.2013
ÇALIK ENERJİ A.Ş. Te: 0 312 207 73 01	Nainawa Power Plant Complete Cathodic Protection System	IRAQ	17.08.2012	1.06.2013
ÇALIK ENERJİ A.Ş. Te: 0 312 207 73 01	Al Khairat Power Plant Complete Cathodic Protection System	IRAQ	17.08.2012	1.06.2013

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TÜRKERLER İNŞAAT A.Ş. Tel: 0 312 492 03 06	Kırşehir Mucur Compressor Station Cathodic Protection System	KIRŞEHİR	6.08.2012	15.01.2013
İMA MÜHENDİSLİK İNŞ. Ve TİC. LTD. ŞTİ Tel: 0 312 231 21 04	Kandıra Namazgah Den Transmission Line Construction Cathodic Protection Plant	GEBZE	5.07.2012	15.12.2012
ATTİLA DOĞAN İNŞ. TES. A.Ş. Tel: 0.312.440.97.00	Erzin Natural Gas Combined Cycle Power Plant Natural Gas Pipeline Cathodic Protection System	Erzin HATAY	25.05.2012	10.12.2013
SIEMENS SANAYİ ve TİC. AŞ. Tel: 0.262.676.40.64	Gebze CC Power Plant Cathodic Protection System	GEBZE	18.05.2012	15.09.2012
TECNICAS REUNIDAS SA Tel: +34 (91) 158 11 80	Erzincan Compressor Station Cathotic Protection System	ERZİNCAN	11.05.2012	31.09.2012
SEBAT PROJE MÜH. MÜŞ. TİC. LTD. ŞTİ. Tel: 0.312.473.08.43	IRAN TURKEY EUROPE Natural Gas Pipeline Cathodic Protection Site Survey and detailed engineering	TÜRKİYE	20.04.2012	15.09.2012
ÇALIK ENERJİ - PZE JV Tel: 0.312.207.71.71	Navoi CC Power Plant Cathodic Protection System	NAVOI ÖZBEKİSTAN	25.06.2011	31.08.2012
FERNAS İNŞ.NAK.VE TİC.LTD.ŞTİ. Tel:0.312.426 62 62	OMV Samsun Natural Gas Cycling Power Plant Natural Gas Pipeline Cathodic Protection System	SAMSUN	20.05.2011	15.04.2012
FERNAS İNŞ.NAK.VE TİC.LTD.ŞTİ. Tel:0.312.426 62 62	OMV Samsun Natural Gas Cycling Power Plant Natural Gas Pipeline Scada System	SAMSUN	10.05.2011	15.04.2012
GAMA GÜÇ SİSTEMLERİ MÜH. VE TAAH. AŞ. Tel:+90.312.416 42 62	Riga Letonya TTP-2 Power Plant Cathodic Protection Survey&Project, Material Supply and Installation Supervision	LETONYA	9.05.2011	31.08.2012
GAMA ENDUSTRİ TES.MONTAJ A.Ş. Tel:+90.0.312.248 43 00	Libya Al Khalij 4x350MW Power Plant Project Cathodic Protection System (Project-Material Supply-Installation)	LİBYA	2.09.2010	1.04.2014
GAMA GÜÇ SİSTEMLERİ MÜH. VE TAAH. AŞ. Tel:+90.312.416 42 62	DISI Water Pipeline Cathodic Protection System Material Supply and Installation Supervision	Mudawarra ÜRDÜN	13.04.2010	31.08.2012
HAZİNEDAROĞLU-TEKSER-GENCE KÖRPÜ J.V. S.Mehdiyev Küç.No:93 Bakü-AZERBEYCAN TEL:00-99-412-5967764	OĞUZ-GABALA-BAKÜ WATER PIPELINE PROJECT (OGB-3) Cathodic Protection System (Project+Material Supply+Installation)	Baku AZERBAIJAN	11.04.2009	25.08.2013
PETKİM PETROKİMYA HOLDING A.Ş. Tel:+90.232.616 32 40	Aliağa Complex Port-5 Cathodic Protection Facility	İZMİR/Aliağa	4.08.2010	15.07.2011
SNH İNŞ.TURİZM TİC. Ve SAN.LTD.ŞTİ. Tel:+90.213 14 70	TOKI ASKİ Turquoise Valley Water Pipeline Cathodic Protection Facility	ANKARA	28.05.2010	28.08.2010
PİKARON İNŞ. TAAH. TİC. LTD. ŞTİ. Tel: +90.312.436 55 54	Suleymaniye Water Pipeline Cathodic Protection Facility	Süleymaniye- IRAK	26.04.2010	4.05.2011
İNCEKAYA İNŞAAT SAN. VE TİC.LTD.ŞTİ. Tel: +90.312.446 93 67	ASKİ , the Marsandiz Station P3 Pump Station Main Transmission Line Cathodic Protection Facility	ANKARA	15.01.2010	28.02.2011

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GÜNGÖR ELEKTRİK SAN.TİC.LTD.ŞTİ. Tel: 0.312.212 02 22	Cathodic Protection of Oil Pipelines under Transmission Line OSMANİYE-RES BAHÇE	OSMANİYE	2.10.2009	15.12.2009
ENKA TEKNİK A.Ş. Tel: 0.212.266 46 99	ZAWIA Water Pipeline Cathodic Protection Facility	TRIPOLI LİBYA	26.08.2009	10.11.2009
ESER MÜHENDİSLİK MÜŞAVİRLİK A.Ş. Tel: 0.312.438 21 75	KHARMER-CHEMCHEMAL-ERBİL Natural Gas Pipeline Cathodic Protection Systems Control	ERBİL IRAK	19.07.2009	15.09.2009
SONELGAS TRANSPORT DU GAS (Günsayıl Co.Ltd.) Tel:+90. 312. 447 91 50	M'SILA to MEDEA 173 km. Naturak Gas Pipe Line Cathodic Protection Foundation	Medea ALGERIA	10.07.2009	15.02.2011
İSDEMİR İskenderun Iron and Steel Factory Tel: +90.326. 758 50 58	Cathodic Protection of Natural Gas Pipe Line Facilities	İskenderun	7.05.2009	14.08.2009
ENKA TEKNİK GENERAL CONTRACTING MAINTENANCE OPARATION AND MANAGEMENT INC. Tel: +90.212. 274 18 00	Cathodic Protection Of Zwitina Power Plant Project	Zwitina LİBYE	28.01.2009	15.11.2009
Minisrty of National Defence, NATO İnformation Department (SEGA Co.Ltd.) Tel:+90.216.467 15 72 35	Cathodic Protection of Oil Pipe Line Facilities	Batman Osmaniye Adana	23.12.2008	9.07.2009
Minisrty of National Defence, NATO İnformation Department (AK-SED Co.Ltd.) Tel:+90.312.439 20 35	Cathodic Protection of Oil Pipe Line Facilities	İzmit Eskişehir Bursa Balıkesir	22.12.2008	25.07.2009
GÖRKEM Cons. Limited Co. Tel : +90.312.4918181	Northern Iraq EPS Refinery Trunk Line Project Cothodic Protection Foundation of Pipeline	IRAQ, ERBİL	17.11.2008	25.01.2009
ENKA Construction & Industry Co. Inc. Tel :+90.212.2741800	Libya Derna ve Soussa Desalination Project Cathodic Protection material procurement	LİBYA	30.07.2008	4.09.2008
SİLOPİ ELECTRİC Co. Tel : +90.216.5312484	Cathodic Protection Foundation of Pipeline between Silopi Hezil Stream and Energy Station	Silopi	22.07.2008	30.01.2009
NES ENERGY Engineering, Construction, Trade, Limited Co. Tel: +90.216.3370582	"GEBZE IV.İSTANBUL Makina ve İmalat Sanayicileri" Organized Industrial Zone I and II Stage D.G.B.Line Cathodic Protection Foundation	Gebze	7.06.2008	20.01.2009
BOTAS Petroleum Transport with Pipelines, Inc(METİN YILMAZ Const.Trading Co.Ltd.) Tel:+90.312.2852264	Çankırı/Korgun-Kızılcahamam-Aktaş Kurtlar Line Valve Naturalgas PipelineCathodic Protection Foundation	Çankırı-Ankara	10.10.2007	15.05.2008
BOTAS Petroleum Transport with Pipelines, Inc.(ÖZTAŞ CONST.INC.) Tel:+90.312.2126168	Samsun-Ankara Naturalgas Pipeline Cathodic Protection Foundation Revision	Samsun-Ankara	15.09.2007	15.11.2007

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DSİ GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS (ATİNAK Co.Ltd.) Tel:+90.216.4559765	Mardin Drinkwater Pipeline Cathodic Protection Foundation	Mardin	21.08.2007	30.11.2007
BOTAS Petroleum Transport with Pipelines, Inc.(ATTİLA DOĞAN..INC.) Tel:+90.312.440 97 00	Bozüyük-Seçköy/Yumurtatepe-Seçköy/CS3-Muallim/Aliağa Pig-Aliağa RMSA Pipelines Capacity İncreasing Cathodic Protection Foundatioın	Bursa-Bozüyük Gebze-İstanbul Aliağa-İzmir	10.11.2006	15.03.2008
BOTAS Petroleum Transport with Pipelines, Inc.(AYDİŞ Const. and Trading Co.Ltd.) Tel:+90.312.4907262	Various OSBs NaturalGas Pipeline Const. Cathodic Protection Foundation	Boğazlıyan, Ağrı, Kırklareli	22.09.2006	31.03.2008
BOTAS Petroleum Transport with Pipelines, Inc(PEKER Const.Trading and Industry INC.) Tel:0+90.312.4361036	Çankırı/Kastamonu/Tosya Naturalgas Pipeline ConstructionCathodic Protection Foundation	Çankırı-Kastamonu-Tosya	9.09.2006	31.01.2008
BOTAS Petroleum Transport with Pipelines, Inc.BM Eng. and Const.Inc. Tel:+90.312.2865353	Malatya-Gaziantep Naturalgas Pipeline Cathodic Protection Foundation Revision	Malatya-Gaziantep	16.06.2006	15.06.2007
TURKEY ELECTRIC PRODUCTION TRANSMISSİON INC.ENER Const.Contract and Trading Inc. Tel:+90.312.4403616	Afşin-Elbistan B Thermic Powerhouse Cooling Water Pipeline Cathodic Protection Foundation	K.Maraş-Elbistan	1.06.2006	30.10.2007
ASO II.OSB. MÜDÜRLÜĞÜ İMA Müh. İnş. ve Tic.Ltd.Şti. Tel:0.312.2312104	ASO II. organized industrial zone Water and Natural Gas Pipeline Cathodic Protection Facilities (Project+Material Supply+Installation)	Ankara-Temelli	24.02.2006	15.08.2006
TOREADOR TURKEY LTD. (FERNAS Co.) Tel:+90.312.4266262	Akçakoca Naturalgas Pipeline Cathodic Protection Foundation	Düzce-Akçakoca	10.02.2006	15.06.2006
BOTAS Petroleum Transport with Pipelines, Inc.(FERNAS Const.Co.Ltd.) Tel:+90.312.4266262	Ordu-Giresun Phase-I and Phase-II Naturalgas Pipeline Cathodic Protection Foundation	Erzincan-Ordu	1.01.2006	Operating stage
TPAO General DirectorateFERNAS Const.Co.Ltd. Tel:+90.312.4266262	TPAO North Marmara and Değirmenköy underground naturalgas store project pipelines cathodic protection foundation (Project+ Material + Installation)	Silivri-İstanbul	1.10.2005	15.07.2006
BOTAS Petroleum Transport with Pipelines, Inc.(ERKO Co.) Tel:+90.212.279 25 81	PT-2,3,4 Pump Stations Naturalgas Pipeline Construction Cathodic Protection Installation(Project+Material+ Installation)	Erzurum-Erzincan-Sivas	12.07.2005	28.12.2005
BTC Crude Oil Pipeline(FERNAS Co.) Tel:+90.312.4266262	IPT-2 Pipeline Cathodic Protection Installation (Providing Native Material + Installation)	Ardahan	30.06.2005	30.10.2005

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GAZİANTEP ORGANIZE , INDUSTRY ZONETEFİROM Co.Ltd. Tel:+90.312.4469245-47	Gaziantep OrganizeIndustryZone 4.Zone Naturalgas Pipeline Cathodic Protection (Project+ Material + Installation)	Gaziantep	10.06.2005	28.12.2005
BTC Crude Oil PipelineTEPE Const.Industry Inc. Tel:+90.312.2662970	Bakü-Tiflis-Ceyhan Crude Oil Pipeline Pump Stations Cathodic Protection Foundation (Providing Native Material + Installation)	K.Maraş-Sivas-Erzincan Erzurum-Kars	5.05.2005	15.07.2006
ERENCO-İSDEMİR Inc.TEFİROM Co.Ltd. Tel:+90.312.4469245-47	Erenco-İsdemir Inc. Naturalgas Distribution Line Construction Cathodic Protection Installation (Project+ Material + Installation)	İskenderun	28.04.2005	28.12.2005
BOTAS Petroleum Transport with Pipelines, Inc.(FERNAS Co.) Tel:+90.312.4266262	Akyazı-Çelvit-Pamukova Naturalgas Pipeline Cathodic Pro.Installation (Project+ Material + Installation)	Adapazarı	1.03.2005	28.10.2005
BOTAS Petroleum Transport with Pipelines, Inc.(FERNAS Co.) Tel:+90.312.4266262	TPAO Silivri Upper Ground Foundation BOTAS Naturalgas Main Transmission Line Connection Project (Project+ Material + Installation)	İstanbul-Silivri	1.03.2005	28.10.2005
AKENERJİ DENİZLİ ENERGY PLANT(TEFİROM Limited Co.) Tel:+90.312.4469245-47	Cathodic protection project equipment supply and Installation of Denizli Akenerji Natural Gas Pipeline	Denizli	22.11.2004	30.05.2005
ALARKO-ALSİM Inc. Tel:+90.262.6482200	Cezayir-Arzew Desalination and Power Plant Project (Project+ Material +Supervisor)	Cezayir-Arzew	11.10.2004	15.05.2005
ASKAL CONSTRUCTION CO. Tel:+90.312.3954367	Aksaray OIZ Naturalgas Distribution Pipeline Cathodic Protection Installation (Project+ Material +Installation)	Aksaray	5.10.2004	31.12.2004
GAZİANTEP ORGANIZE, INDUSTRY ZONE (TEFİROM Limited Co) Tel:+90.312.4469245-47	Cathodic protection project equipment supply and Installation of Gaziantep Organize Industry Zone Natural Gas Pipeline	Gaziantep	25.08.2004	30.05.2005
BOTAS Petroleum Transport with Pipelines, Inc.SERHAT Const.Co.Ltd. Tel:+90.312.4470718-19	Sorgun Naturalgas Pipeline Cathodic Protection (Project+ Material + Installation)	Yozgat-Sorgun	23.06.2004	25.06.2006
KUWAIT ENERGY and WATER MINISTRY (MEW)YENİGÜN-ACK Partnership Tel:+90.312.4682868	Subiya-Mutla Water Pipeline Cathodic Protection Foundation (Project+ Material + Installation)	Kuwait City	5.04.2004	15.07.2006
BTC Crude Oil Pipe Line (TEPE-NACAP Joint Venture)Cathodic Protection Co. U.K. Sub Contraction	Cathodic protection equipment supply and installation of Lot A of Bakü-Tbilisi-Ceyhan Crude Oil Pipeline	Posof-Erzurum	17.02.2004	15.12.2005

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BOTAS Petroleum Transport with Pipelines, Inc.(ERKO Co.) Tel:+90.212.279 25 81	Sivas-Malatya Naturalgas Distribution Pipeline Cathodic Protection Foundation	Sivas-Malatya	11.02.2004	15.06.2006
botas Petroleum Transport with Pipe Lines, Inc.(TEPE Construction Co.) Tel:+90.312.2662970	Cathodic protection project equipment supply and Installation of Kütahya-Tavşanlı(Calmag) Natural Gas Pipeline	Kütahya	10.02.2004	31.03.2005
EMITY OIL INT.PTY.LTD. Troya Mine Oil Project Co. Tel:+90.312.4684653	Trakya Region, Adatepe 1,2,3 Göçerler Naturalgas Pipeline Cathodic Protection Installation	Çorlu	16.10.2003	30.12.2003
KAYSERİ ORGANIZE INDUSTRY ZONE(MEG-YILDIZ-PASİNER Joint Venture) Tel:+90.312.4844453	Cathodic protection project equipment supply and Installation of Kayseri Organize, Industry Zone Natural Gas Pipe-Lines	Kayseri	26.05.2003	27.07.2003
ÖZYAPI İnş. San. ve Tic.A.Ş. Tel:0.262.335 49 00	Kocaeli HWYKI Construction Contract Package Permanent Housing Natural Gas Pipeline Construction Cathodic Protection System (Project + Material + Installation)	Gölcük Kocaeli TURKEY	15.04.2003	15.08.2003
İzmir-Kemalpaşa Organize Sanayi Bölgesi TEFİROM Ltd. Şti. Tel:0.312.446 50 79	İzmir-Kemalpaşa Organized Industrial Zone Akenerji Natural Gas Pipeline cathodic protection system	Kemalpaşa İzmir TURKEY	20.02.2003	15.05.2003
DSİ Genel Müdürlüğü XV.Bölge Müdürlüğü (Sistemyapı İnş.ve Tic. A.Ş.) Tel:0.216.413 77 75	Sanliurfa Drinking Water Treatment Plant and Co Transmission Line cathodic protection system	Şanlıurfa TURKEY	7.01.2003	18.08.2003
Botas Petroleum Transport with Pipe Lines, Inc.(TEPE Construction Co.) Tel:+90.312.2662970	Cathodic protection project equipment supply and Installation of Bilecik-Kütahya-Uşak Natural Gas Pipeline	Bilecik-Kütahya-Uşak TURKEY	20.12.2002	31.03.2005
M.S.B.NATO ENF.D.BŞK.LIĞI (MAKTAŞ A.Ş.) Tel:0.216.6511014	Capacity Building of Diyarbakir Tank Farm Warehouses Cathodic Protection Facility System	Diyarbakır TURKEY	13.12.2002	30.10.2003
KONYA ORGANIZE INDUSTRY ZONE (BORHAT Limited Co) Tel:+90.312.4363842	Cathodic protection project equipment supply and Installation of Konya Organize, Industry Zone Natural Gas Pipe-Lines	Konya TURKEY	1.11.2002	15.08.2003
M.S.B.NATO ENF.D.BŞK.LIĞI (BORHAT İnş.Tic.San.Ltd.Şti.) Tel:0.312.4363842	Increasing the Capacity of Batman Pol Warehouses Cathodic protection System	Batman TURKEY	22.10.2002	30.10.2003
Uşak Organize Sanayi Bölge Müdürlüğü USAŞ-TEFİROM İş Ortaklığı Tel:0.312.446 50 79	Uşak Organized Industrial Zone Natural Gas Pipeline Cathodic Protection System	Uşak TURKEY	15.10.2002	19.01.2003
BOTAŞ BORU HATLARI İLE PETROL TAŞIMA AŞ. (ERKO İnş.Ltd.Şti.) Tel:0.212.279 25 81	Ereğli-Aksaray-Niğde Natural Gas Distribution Pipeline Cathodic Protection System	Aksaray TURKEY	20.05.2002	28.02.2005

BOTAŞ BORU HATLARI İLE PETROL TAŞIMA AŞ. (ATTİLA DOĞAN İnş.Tes.AŞ.) Tel:0.312.440 97 00	Bozüyük-Eskişehir natural gas pipeline cathodic protection material + installation	Eskişehir TURKEY	1.02.2002	28.02.2002
Ministry of National Defense, NATO Information Department(ENKA-KASKTAŞ Co.) Tel:+90.212.2745842	Cathodic protection works of İzmir shipyard east pier and repair jetty	İzmir-Karşıyaka TURKEY	30.01.2002	6.05.2002
BOTAŞ BORU HATLARI İLE PETROL TAŞIMA AŞ. (LNG İşletme Mg.lüğü Tekirdağ) Tel:0.282.613 02 50 (5 Hat)	Cathodic protection of scaffold feet (Material + Installation)	M.Ereğlisi Tekirdağ TURKEY	28.01.2002	8.04.2002
ENERJISA Co.(OTEY Limited Co.) Tel:+90.312.4415200	Cathodic protection project equipment supply, Installation works of Enerjisa Natural Gas Pipe-Lines	Ezine-Çanakkale TURKEY	26.01.2002	28.04.2002
SİNOP ORGANIZE, INDUSTRY ZONE(İMSEÇ Limited CO) Tel:+90.368.260 29 31	Cathodic protection project, Equipment Supply and Installation of Sinop Organize, Industry zone	Sinop TURKEY	20.11.2001	28.02.2002
YÜKSEL – TEMELSU Consortium Tel:+90.312.495 70 00	Baku-Tbılısı-Ceyhan Crude oil pipeline project soil resistivity study	Posof - Ceyhan TURKEY	25.09.2001	15.01.2002
EGO GENEL MÜDÜRLÜĞÜ (GÜRİŞ İnş.Müh.A.Ş.) Tel:0.312.491 63 10	Ankara Natural Gas Renewal and Dissemination 3rd Stage Construction Project cathodic protection system	Ankara TURKEY	17.09.2001	31.07.2002
Ministry of National Defense, NATO Information Department (METİŞ INC.) Tel:+90.312.4381170	Cathodic protection revision work of fuel facilities of Sabiha Gökçen (Kurtköy) Airport	İstanbul TURKEY	27.08.2001	1.11.2001
AMITY OIL INT. PTY. LTD (Troya Inc.) Tel:+90.312.4684623	Cathodic protection installation of Göçerle-Misinli Natural Gas Pipe-line	Tekirdağ-Saray TURKEY	23.05.2001	8.08.2001
Turkey Electricity Generation and Transmission Inc. (ENER INC) Tel:+90.312.4663548	Afşin-Elbistan cooling water cathodic protection project	K.Maraş TURKEY	20.05.2001	15.10.2001
Ministry of National Defense, NATO Information(KAS Cons. Ind. and Tra..INC.) Tel:+90.312.446 30 32	Cathodic Protection Installation of Karadeniz Zone Commandership Jety	Kdz.Ereğli	1.05.2001	30.07.2001
Ministry of National Defense, NATO Information(CESAŞ Cons. Tra. and Ind. INC.) Tel:+90.312.4418480	Installation of Cathodic Protection to Stell Piles of Konca Mine Jety	Gölcük-İzmit	11.04.2001	30.06.2001
Ministry of National Defense, NATO Information Department (POTANSİYEL LIMITED CO.) Tel:+90.312.4817525	Application of cathodic protection to fuel pipe-lines	İskenderun-Osmaniye Antalya-Burdur İzmit-Çatalca	23.02.2001	31.12.2001
Botas Petroleum Transport with Pipe-lines, Inc. (OTEY Limited Co.) Tel:+90.312.4269639	Cathodic protection installation of Bursa CS-4 Compressor Station	Bursa-Yenişehir	8.09.2000	15.11.2000

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DSİ (State Hydraulic Works) IVth Regional Directorate (Erko Construction and Trade Limited Co.) Tel:+90.212.2792581	Cathodic protection installation of Konya Water Supply Line	Konya	8.09.2000	31.12.2000
MSB.NATO ENF.D.BŞK.lığı CESAŞ İnş.Tic. ve San. AŞ. Tel:0.312.441 84 80	Material Supply and Installation of Steel Pipes of Gölcük Submarine I and II Scaffolds	Gölcük	2.06.2000	13.10.2000
Botas Petroleum Transport with Pipe-lines, Inc.(OHS Business Partnership) Tel:+90.312.2661282	Cathodic protection of Samsun Ankara natural gas pipe-line	Samsun- Ankara	3.03.2000	30.10.2001
Ministry of National Defense, NATO Information Department KORTAŞ Construction Industry and Trade Ltd. Co.) Tel:+90.216.4110014	Application of cathodic protection on aircraft shelter fuel pipe-lines at Adana-İncirlik Airport	Adana	15.12.1999	28.12.1999
DSİ (State Hydraulic Works) Vth Regional Directorate (Ankara Water Supply Project Directorate) Tel:+90.312.2879320	Application of cathodic protection on Çamlıdere water supply line	Ankara	14.12.1999	24.12.1999
Botas Petroleum Transport with Pipe-lines, Inc. (OTEY Ltd. Co.) Tel:+90.312.4269639	Cathodic protection of the natural gas pipe-line of Eskişehir Magnezit and Yurtbay Ceramics Factories	Eskişehir	6.12.1999	15.03.2000
Ministry of National Defense, NATO Information Department (Borhat-Servet ARAR Business Partnership) Tel:+90.312.4363842	Cathodic protection of the fuel pipe-line between Diyarbakır Tank Line – Airport	Diyarbakır	21.10.1999	10.05.2000
Ministry of National Defense, NATO Information Department (Atilla Doğan Construction and Installation Inc.) Tel:+90.312.4409700	Cathodic protection of Batman Airport fuel facilities	Batman	27.09.1999	10.03.2000
CARGILL Agriculture Industry and Trade Inc.) (OTEY Ltd. Co.) Tel:+90.312.4269636	Application of cathodic protection on Cargill Natural Gas Pipe-line	Bursa	15.09.1999	25.01.2000
Ministry of National Defense, NATO Information Department (CESAŞ Construction Trade and Industry Inc.) Tel:+90.312.4418480	Cathodic Protection of İzmir Uzunada Pol Quay	İzmir-Çeşme	23.08.1999	15.10.1999
DLH General Directorate (TEMA Project, Construction Trade Limited Co.) Tel:+90.312.2814480	Cathodic protection of Bursa-Yenişehir Airport fuel facilities	Bursa	17.08.1999	29.11.2000
ENERJİSA INC. (OTEY Ltd. Co.) Tel:+90.312.4269639	Cathodic protection of natural gas pipe-lines of Enerjisa 2 turbine and auxiliary boilers	Kocaeli	13.08.1999	15.09.1999

Ministry of National Defense, NATO Information Department (POTANSİYEL Construction, Electricity, Trade Ltd. Co.) Tel:+90.312.4817525	Cathodic protection installation of drainage system of Kayseri and Merzifon tank farms	Kayseri-Merzifon	14.07.1999	15.10.1999
Botas Petroleum Transport with Pipe-lines, Inc. (Peker Construction Trade and Industry Limited Co.) Tel:+90.312.4361036	Cathodic protection installation of CS-2 Ambarlı Compressor Station	Ambarlı-İstanbul	29.04.1999	29.12.2000
KALEBODUR INC. (OTEY Ltd. Co.) Tel:+90.312.4269639	Cathodic protection of Kalebodur Inc. Semedali Kalevit natural gas pipe-line	Çan Çanakkale	22.02.1999	23.06.1999
NUH Construction Products and Machinery Inc. (OTEY Ltd. Co.) Tel:+90.312.4269639	Cathodic protection of Hereke Nuh Cement Factory co-generation unit natural gas pipe-line	Kocaeli	20.02.1999	15.07.1999
DSİ (State Hydraulic Works) Vth Regional Directorate (ERKO Ltd. Co.) Tel:+90.212.2792581	Cathodic protection of the treatment plant supply line between Çubuk II Dam – Pursaklar	Ankara	17.02.1999	10.05.1999
Ministry of National Defense, NATO Information Department (GEMAŞ INC.) Tel:+90.312.4366348	Execution of corrosion study on Eastern Anatolia and Western Anatolia fuel pipe-lines and the preparation of the technical reports	İskenderun-Erzurum Antalya-Çatalca (Overall of Turkey)	4.01.1999	15.12.1999
DLH General Directorate (TEMA Project, Construction Trade Limited Co.) Tel:+90.312.2814480	Cathodic protection of Çorlu Airport fuel facilities	Çorlu	19.11.1998	6.01.1999
Botas Petroleum Transport with Pipe-lines, Inc. (OTEY Ltd. Co.) Tel:+90.312.4269639	Cathodic protection of Bursa Ovaakça type A RMS natural gas pipe-line	Bursa	20.08.1998	25.11.1998
Hopa Port Enterprises Inc. (DENMAR Merchant Marines Inc.)	Cathodic protection of the available fuel tanks of Hopa Port	Hopa Artvin	5.06.1998	15.07.1998
Botas Petroleum Transport with Pipe-lines, Inc. (BELİT Ltd. Co.) Tel:+90.216.4149476	Complete cathodic protection of the natural gas pipe-line between Bahçeşehir Co-generation System and RMS	İstanbul	17.11.1997	20.07.1998
Republic of Turkey, Ministry of National Defense, NATO Information Department (MAKTAŞ-BORHAT Business Partnership) Tel:+90.312.4363842	Complete cathodic protection of the 6” fuel pipe-line between Çukurhisar Tank Farm and Eskişehir Airport	Eskişehir	1.08.1997	20.02.1998
Botas Petroleum Transport with Pipe-lines, Inc. (FERNAS Construction, Transport and Trade Ltd. Co.) Tel: +90.312.4400583	Turkey - Russia natural gas pipe-line renovation and improvement project, complete cathodic protection of LOOP pipe-lien (LOOP 1-2-3)	Kırklareli İstanbul Bursa	14.04.1997	12.08.1998

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Botas Petroleum Transport with Pipe-lines, Inc. (ENKA Technical General Contracting, Maintenance, Operation, Handling and Management Inc.) Tel:+90.212.2741800	Complete installation and commissioning of CS3 Gebze Compressor Station cathodic protection works	İzmit	3.04.1997	13.03.1998
Ministry of National Defense, NATO Information Department, POL Group (Atilla Doğan & ETHEM-HİKMET ARUTAN JV. Tel:+90.312.4409700	Turn-key execution of field survey, project design, material supply, installation, commissioning and acceptance works of the cathodic protection of 6" 106.300 km Elazığ - Diyarbakır pipe-line for NATO POL GROUP DEPARTMENT	Elazığ Diyarbakır	6.03.1997	10.07.1998
PAYET Eng. Cons. & Trade Co. Ltd. Tel:+90.312.4460096	Cathodic Protection of USA Ankara Embassy Fuel Tank	Ankara	29.01.1997	20.02.1997
Botas Petroleum Transport with Pipe Lines Inc. (FEMKO Cons. Ind. & trade Co. Ltd.) Tel:+90.212.2792581	Construction of steel pipe line and cathodic protection for Bozüyük Akenerji Cogeneration system	Bozüyük Bilecik	25.11.1996	15.04.1997
PETROL Ofisi Inc. Directorate General of Technical Works (ODİN Cons. Inc.) Tel:+90.216.4145392	Cathodic protection for Petrol Ofisi İzmit Regional Directorate black pipe line	İzmit	9.08.1996	13.09.1996
İSKİ İstanbul Administration of Water and Sanitation(Kalyon Cons & Trade Coll. Co.) Tel:+90.212.2835769	Complete cathodic protection work of İSKİ İkitelli-Halkalı Ø1 200 mm steel pipe line	İstanbul	24.06.1996	15.03.1997
TEKEL Directorate General(LİMAK Cons. Ind. & Trade Co. Ltd.) Tel:+90.312.4468800	Cathodic protection of fire hydrant line of Tekel Karaman Factory	Karaman	2.06.1996	15.07.1996
MND NATO Department of Information(ÇELKO Cons. Co. Ltd) Tel:+90.312.4412808	Installation of cathodic protection for Amasra naval base fire extinguishing water pipe line	Amasra	15.05.1996	15.06.1996
ÇBS Paint & Chemical Industry Inc. Tel:+90.262.7449560	Gebze ÇBS Factory Hydrant line cathodic protection	Gebze	29.04.1996	10.06.1996
Botas Petroleum Transport with Pipe Lines Inc. (ATTİLA DOĞAN INC.) Tel:+90.312.4409706	Pazarcık-Kdz. Ereğli natural gas pipe line cathodic protection	İzmit- Adapazarı Düzce-Kdz.Ereğli	1.03.1996	25.10.1996
AKENERJİ Elc.Generation Auto producer Group Inc.(FEMKO Cons. Ind. & Trade Co. Ltd.) Tel:+90.212.2792581	Cathodic protection of Alaplı AKENERJİ electricity generation natural gas pipe line	Kdz.Ereğli Alaplı	29.02.1996	9.09.1996
TÜPRAŞ Directorate of İzmit Refinery (İzmit/Körfez) Tel:+90.262.5270660	Modification of cathodic protection system of FAZ-I old quay	İzmit-Körfez	10.01.1996	21.03.1997
İSKİ Directorate General (KALYON Cons. & Trade Coll. Ent.) Tel:+90.212.6710060	Cathodic protection of Ömerli-Dudullu-Çamlıca water supply line	İstanbul	21.12.1995	23.03.1996

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AFJET – Afyon Geothermal Pipe line(ETKİ Cons. & Trade Co. Ltd) Tel:+90.312.2131171	Material supply for the cathodic protection of Afyon Geothermal pipe line main transmission line	Afyon	9.11.1995	19.03.1996
Anadolu University(BETA Eng. & Trade co. Ltd.) Ankara Tel:+90.312.4352130	Cathodic Protection of Anadolu University Pipe Line	Eskişehir	10.10.1995	13.11.1995
MND NATO Department of Information(ESER Eng. Consulting Inc.) Tel:+90.312.4382175	Cathodic protection of İskenderun-Malatya-Elazığ pipe line	Ankara	11.09.1995	15.11.1995
TPAO(FERNAS Ind. Ins. Industry & Trade Inc.) Tel:+90.312.4400583	Cathodic Protection of Değirmenköy-Trakya Glass Factory 47 km Ø8" pipe line	Çorlu	23.08.1995	23.12.1995
Botas (Petroleum Transport with Pipe Lines Inc.(STFA ENERKOM INC.) Tel:+90.312.4674410	Complete Cathodic Protection of 210km Bursa-Çan natural gas pipe line	Bursa-Karacabey Bandırma-Çan	28.07.1995	17.02.1997
ERDEMİR INC.(FERNAS Cons.Transport & Trade Co. Ltd.) Tel:+90.312.4400583	Installation of Cathodic Protection for Erdemir RMS-Natural Pipe Line	Kdz.Ereğli	27.07.1995	14.08.1995
Turkish Sugar Factories Inc.Ankara Sugar Factory Tel:+90.312.2431120	Purchase of Cathodic Protection Material	Ankara	20.06.1995	23.08.1995
TEKEL Directorate General(LIMAK Cons. Ind. & Trade Co. Ltd.) Tel:+90.312.4468800	Cathodic Protection of Alaşehir –Suma Factory Water Supply Line	Alaşehir Manisa	16.06.1995	25.12.1995
Çanakkale Ceramic Factory(OTEY Cons. Elec. Ind. & Trade Co. Ltd.) Tel:+90.312.4269639	Cathodic Protection of natural gas pipe line between Çan RMS-Kalebodur	Çan Çanakkale	10.05.1995	13.07.1995
Bilkent University(BETA Eng. Commerce Co. Ltd.) Tel:+90.312.4352130	Cathodic protection of internal natural gas pipe lines in Bilkent Houses	Ankara	7.04.1995	20.10.1995
MND NATO Department of Information(BORİN Cons. Co. Ltd.) Tel:+90.312.4467768	Elazığ-Diyarbakır-Batman cathodic protection of fuel pipe line Ø 4" 450 km	Diyarbakır	10.10.1994	13.11.1995
Türkiye Şeker Fabrikaları Şeker Enstitüsü Md.lüğü ANKARA Tel:0.312.2431120	Supply of cathodic protection material (Project + Material + Installation)	Ankara	----	22.12.1994
PETROL Ofisi Inc. Directorate General of Technical Works (SERVET ARAR Eng-Contracting) Tel:+90.312.4678522	İzmit Regional Directorate cathodic protection of pipe lines between TF – 18	İzmit	5.10.1994	7.12.1994
Botas Petroleum Transport with Pipe Lines Inc. (EPSİLON Inc.) Tel:+90.312.4366020	Cathodic Protection of Eskişehir Natural Gas Pipe Line	Eskişehir	30.09.1994	21.06.1996
Botas Petroleum Transport with Pipe Lines Inc. (ERKO CO. LTD.) Tel:+90.212.2792581	İzmit-Köseköy natural pipeline transmission line cathodic protection	İzmit	26.07.1994	12.01.1995
TEKFEN Cons. Installation Inc. Tel:+90.212.2658050	Cathodic protection of Satellite Town Project 1st stage drinking water steel pipe lines with Ø800, Ø900 mm.	Atakent İstanbul	15.07.1994	10.01.1995

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MND NATO Department of Information(ÇELKO Cons. & Commerce Co. Ltd) Tel:+90.312.4412808	Gonca Mine Facilities Fire Extinguishing Water pipe line cathodic protection	İzmit	17.06.1994	21.09.1994
Petrol Ofisi General Directorate Inc. Contract Dep. ANKARA Tel:+90.312.4176460	Supply of cathodic protection material required by the contract Dep.	Eskişehir Malatya	17.06.1994	29.09.1994
botas Petroleum Transport with Pipe Lines Inc. (BORHAT Cons. & Ind. Co. Ltd.) Tel:+90.312.4363842	Bursa RMS stations Cathodic Protection	Bursa	10.06.1994	5.12.1995
Botas Petroleum Transport with Pipe Lines Inc. (FERNAS Cons.Trans. & Commerce Co. Ltd.) Tel:+90.312.4400583	botas Cathodic protection Of Rice Depots tanks and pipe lines	Diyarbakır	30.11.1993	15.01.1994
İSDEMİR İskenderun iron and Steel Factory Tel:+90.326.7556260	Mersin Stream Water supply Line Cathodic Protection	İskenderun	12.10.1993	12.12.1993
Directorate General of Provincial Bank Department of Drinking WaterTel:+90.312.3103141	Giresun (Center) Drinking water Cathodic Protection)	Giresun	25.06.1993	3.02.1994
Directorate General of Provincial Bank Department of Drinking WaterTel:+90.312.3103141	Trabzon (District) Drinking Water Cathodic Protection	Trabzon	25.06.1993	3.02.1994
Directorate General of Provincial Bank Department of Drinking WaterTel:+90.312.3103141	Giresun (Çavuşlu) Drinking Water Cathodic Protection	Giresun	25.06.1993	4.02.1994
Directorate General of Provincial Bank Department of Drinking WaterTel:+90.312.3103141	Trabzon (Şalpazarı) Drinking Water Cathodic Protection	Trabzon	25.06.1993	4.02.1994
İSKİ İstanbul Administration of Water and Sanitation (ZİTAŞ - KORTEK Partnership) Tel:+90.216.4107836	Cathodic protection of water pipe lines in various locations in the scope of İSKİ 3rd stage project	İstanbul	3.09.1992	14.10.1996