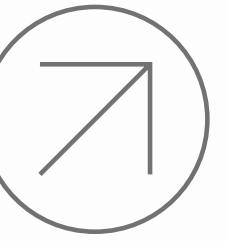


PRESENTAION



ABOUT US



PRIME ENERGY GROUP

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ABOUT OUR COMPANY:



- a diversified group of enterprises, consisting of the engineering company "Prime Energy Group" in Kyiv, the production and construction and installation enterprise "Elmet" in Kharkov and the research and production enterprise "Karbin-Techno" in Boryspil. The Group provides services for the design of cathodic protection systems from corrosion. Performs construction and installation works of CP systems, also develops and produce equipment and solitare for cathodic protection of field, process, main and distribution pipelines from soil corrosion



PRODUCTION OF EQUIPMENT FOR CP

One of the priority activities of Prime Energy Group is the production of equipment for cathodic protection against electrochemical corrosion of pipelines and other buried steel structures

CP EQUIPMENT:

CP Stations

Magnetite anodes

Join CP blocks

Remote Monitoring and Control Systems for CP

Remote Monitoring and Control of Gaz counters

CP STATIONS “SKZI”

SKZI is an inverter rectifier of cathodic protection and is intended for corrosion protection of buried structures of various purposes, single and multi-line oil and gas pipelines, pumping and compressor stations, power stations and substations, oil-filled, cables 110-220 kV, power cables 6-35 kV, heating networks, concentrated systems at industrial facilities

CONTROL MODES:

Remote control



Manual control



OPERATING MODES:

automatic stabilization of protective potential



automatic output voltage stabilization



automatic stabilization of the output current



CP stations automatically switches to the output current stabilization mode in the cases of a break in the reference electrode circuit



CAPABILITIES OF THE SYSTEM OF CONTROL OF THE MAIN EQUIPMENT:

- CONTROL OF UNAUTHORIZED ACCESS TO EQUIPMENT
- STATION OPERATION MODES CONTROL
- OPERATING TIME METER CONTROL
- CONTROL OF ELECTRICITY METERS
- CONTROL OF THE MAIN OPERATING PARAMETERS
(output current, output voltage, protective potential)

THE SYSTEM PROVIDES:

- SURVEY DEVICES AT INTERVALS OF 1 MIN UP TO 24 HOURS
- GENERATE REPORTS AND SCHEDULES OF EQUIPMENT OPERATION
- STORES WORKING DATA ON THE SERVER
- ARCHIVE DATA



CP STATIONS “SKZI”





REMOTE MONITORING AND CONTROL SYSTEMS FOR CATHODIN PROTECTION AGAINST CORROSION

HARDWARE AND SOFTWARE COMPLEX WHICH CONSISTS OF:

Software:

- DATABASE
- SOFTWARE
- WEB-USER INTERFACE

Hardware:

- CP EQUIPMENT (CATHODIC PROTECTION STATIONS / DRAINAGE PROTECTION STATIONS)
- GSM MODEM (RECEPTION/TRANSMISSION OF DATA VIA TCP/IP PROTOCOL)
- SERVER (DATA STORAGE AND PROCESSING)



Main tasks facing the
remote monitoring and
control system

[PROVISION OF CONTROL OVER THE OPERATION
OF CP FACILITIES IN REAL TIME MODE

[**DATABASE MANAGEMENT**

(Collection, Processing And Archiving Of Data)

[PROVISION OF THE POSSIBILITY OF
REMOTE CONTROL OF THE OPERATING MODES
OF CP FACILITIES FROM THE WORKPLACE



REMOTE CONTROL
PROVIDES ONLINE
ACCESS TO
REVIEW,
COLLECTING AND
ARCHIVING OF THE
FOLLOWING
PARAMETERS:

NAME OF PARAMETERS	VALUE RANGE
PROTECTIVE POTENTIAL OF THE PIPELINE	-5... +5 V
OUTPUT CURRENT OF CP STATION	0... 60 aMP
OUTPUT VOLTAGE OF CP STATION	0... 100 V
INPUT VOLTAGE OF CP STATION	0... 300 V
CIRCUIT RESISTANCE	0... 1000 Omh
CURRENT OF DRAINAGE	0... 500 A
TEMPERATURE	-50...+100 °C



REMOTE CONTROL
PROVIDES ONLINE
ACCESS TO
REVIEW,
COLLECTING AND
ARCHIVING OF THE
FOLLOWING
PARAMETERS:

PARAMETERS	VALUE RANGE
STATE OF CP DOOR OF CP/DRAINAGE STATION	Open/Closed
AVAILABILITY OF GSM SIGNAL	Signal/no signal
AVAILABILITY OF INPUT VOLTAGE (POWER SUPPLY)	
RECORDING PARAMETERS TO THE BUILT-IN MEMORY (2 DAYS) IN THE ABSENCE OF THE GSM SIGNAL, WITH SUBSEQUENT DATA TRANSFER AFTER THE GSM SIGNAL IS RESTORE	
REFERENCE ELECTRODE STATUS	
TRANSMISSION OF ELECTRIC METER DATA	
TRANSFER OF HOUR METER DATA	
ALARM - DRAIN/ANODE CABLE BREAK	
ALARM - REFERENCE ELECTRODE CABLE BREAK	



REMOTE CONTROL PROVIDES:

PARAMETER /MODE	MEANING
PROTECTIVE POTENTIAL SETTING	-0,9... -3,5 V
OUTPUT CURRENT OF CP STATION	0... 60 Amp
OUTPUT VOLTAGE OF CP STATION	0... 100 V
SETUP/TRANSFER IN STABILIZATION MODE:	-Protective Potential
	-Output Voltage
	-Output Current
STATUIS OF CP STATION	On/Off



AUTOMATED WORKPLACE:

DATABASE

Data Collection

Data Processing

Data Archiving

SOFTWARE

Analysis Of Equipment Operation Parameters

Report Generation For Any Selected Period

Formation Of Work Parameter Schedules

Multilevel Authorized Acces:
-Area Of Responsobility
-Local Office
-Main Office

Control And Notification Of
Out-Of-Norm Parameters



AUTOMATED WORKPLACE:

DATABASE

Data Collection

Data Processing

Data Archiving

SOFTWARE

Enter manual measurements of parameters

Forming online event log

Enter comments by the operator

Upload documents for each CP Station/Dreinage (passport, operating manual, input act, connection diagram, etc.)

Backup the database

Restore the database from the archive



WEB- INTERFACE

Objects

CP Station №1

CP Station №2

CP Station №3

CP Station №4

CP Station №5



JOIN CATHODIC PROTECTION BLOCKS

PURPOSE

Join cathodic protection blocks (JCPB) for are used in systems of electrochemical protection of underground steel structures against ground corrosion and are designed for the joint protection of several objects from one cathodic protection station, as well as the elimination of the harmful mutual influence of adjacent pipelines and other communications (structures) by distributing and installing a protective current flowing into each underground steel structure, to provide the required protective potential.

SPECIAL FEATURES

- Start of EL conduction – 0,2 - 0,3 V, achieved by using a technical solution to replace diodes with a transistor circuit (Single-sided conduction device)
- Output current stabilization
- Lack of discreteness of the current setting - its smooth regulation
- Smoothing of CP station output voltage ripple
- Indication of operating parameters of the unit :
 - current flow indication (discreteness – 100 mA)
 - voltage indication (on power clamps with discreteness – 100 mV)
- No need to connect external power sources for the operation of the current regulator (the part of the energy that is allocated in the traditional diode-resister blocks in the form of heat on the resistive elements is used)
- Built-in high-speed electronic protection against emergency operation
- Equipping products with easily replaceable surge protection



IMPROVING THE EFFICIENCY OF THE CP SYSTEM

- at crossed or approached pipelines to eliminate mutual harmful effects
- at crossed or approached pipelines with armored communication cables
- at the crossing of pipelines through highways and railways to ensure the CP of casings
- for connecting and adjusting the current of galvanic anodes
- in places of installation of insulating joints (flanges, monoblocks)
- when protecting several pipelines from one CP station
- to increase the protective zone of pipelines by the CP system by connecting unprotected gas pipelines



JOINE CATHODIC PROTECTION BLOCKS (JCPB)

- 1 FRAME
- 2 CURRENT REGULATOR KNOB
- 3 SHUNT CONTACT CLAMPS
- 4 CONTACT CLAMP IN FOR CONNECTING THE CABLE FROM THE CP STATION
- 5 CONTACT CLAMP OUT FOR CONNECTING THE CABLE FROM THE PIPELINE (STRUCTURE)
- 6 SURGE PROTECTION DEVICE

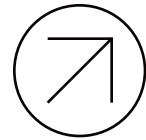




MAGNETITE ANODES

magnetite (Fe_3O_4) is a natural mineral with good conductivity and a high degree of oxidation that makes it resistant to corrosion even at high temperatures. careful alloying with other minerals can produce anodes with excellent electrochemical properties and mechanical strength. the magnetite anode is casted in hollow cylindrical forms to minimize weight and to facilitate cable-to- anode connections at the center of the anode. this center cable-to- anode connection allows a uniform current distribution at the anode surface. the surface of the anode in the hollow center is lined with a layer of copper of optimum thickness and length to ensure a highly reliable current conduction between cable connector and anode. the hollow annular space is filled with a dielectric compound after the cable connection is made and the ends of the anode are sealed with anode caps to prevent ingress of foreign matter.

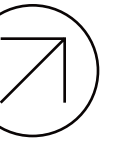




MAGNETITE ANODES

NAME OF PARAMETERS	VALUE
SPECIFIC GRAVITY	4,7 - 4,8 Kg/Dm3
BRINELL HARDNESS	344 HB
DENSITY	4,71 G/Cm3
MELTING POINT	1 500 °C
CONSUMPTION RATE	0,02-0,04 Kg/(A*Year)
CURRENT DENSITY	70 A/M2

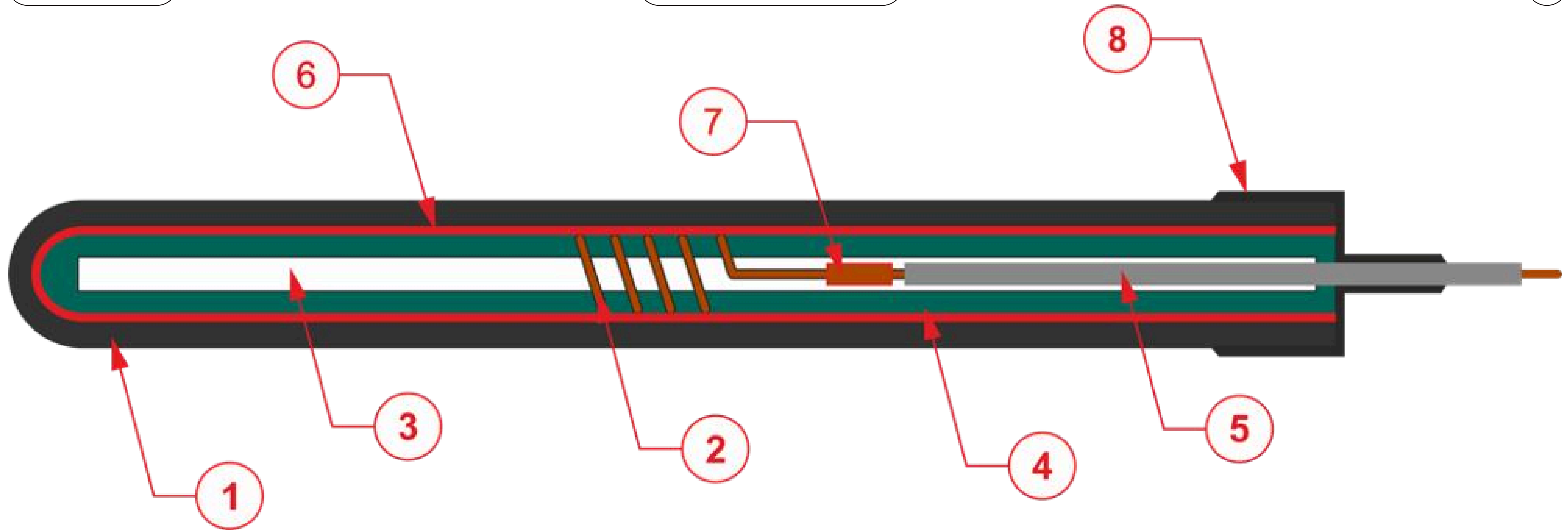
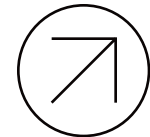




SPECIAL FEATURES

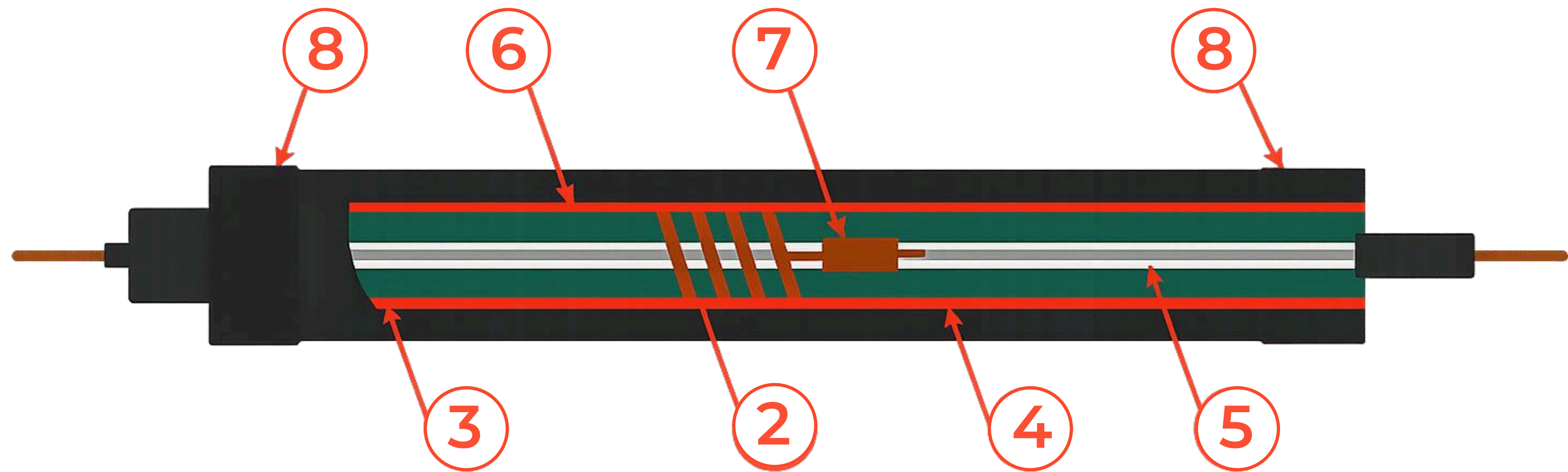
- Operates at high current densities with extremely low dissolution
- Not susceptible to ripple in DC supply
- No limit on DC voltage output
- Light weight and easy to install, removable for inspection and reinstalment
- Smoothing of CP station output voltage ripple
- Center cable-to-anode connection for uniform current distribution and consumption of anode surface





CONSTRUCTION OF MAGNETITE ANODE TYPE I

- 1 MAGNETITE
- 2 CONTACT SPRING
- 3 LINEAR TEMPERATURE EXPANSION COMPENSATOR
- 4 SEALING COMPOUND
- 5 CURRENT-CARRYING CABLE
- 6 ELECTRICAL DISTRIBUTION PAD
- 7 CONTACTC LAMP
- 8 PROTECTIVE HEAT - SHRINK ABLE COUPLING ON AN ADHESIVE BASIS



CONSTRUCTION OF MAGNETITE ANODE TYPE II

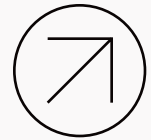
- 1 MAGNETITE
- 2 CONTACT SPRING
- 3 LINEAR TEMPERATURE
EXPANSION COMPENSATOR
- 4 SEALING COMPOUND

- 5 CURRENT-CARRYING CABLE
- 6 ELECTRICAL DISTRIBUTION PAD
- 7 CONTACTC LAMP
- 8 PROTECTIVE HEAT - SHRINK ABLE
COUPLING ON AN ADHESIVE BASIS

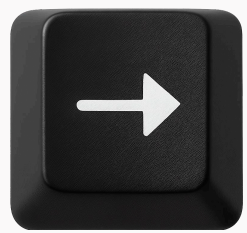
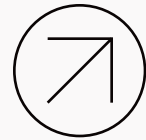


SPECIFICATIONS

- * (for use in soils of different aggressiveness)
- ** (for use in stagnant or flowing water, sea water)
- *** (for the delivery option “C” - complete, the typical version of the configuration is specified. The standard dimensions of the can be changed depending on the requirements of the Customer)

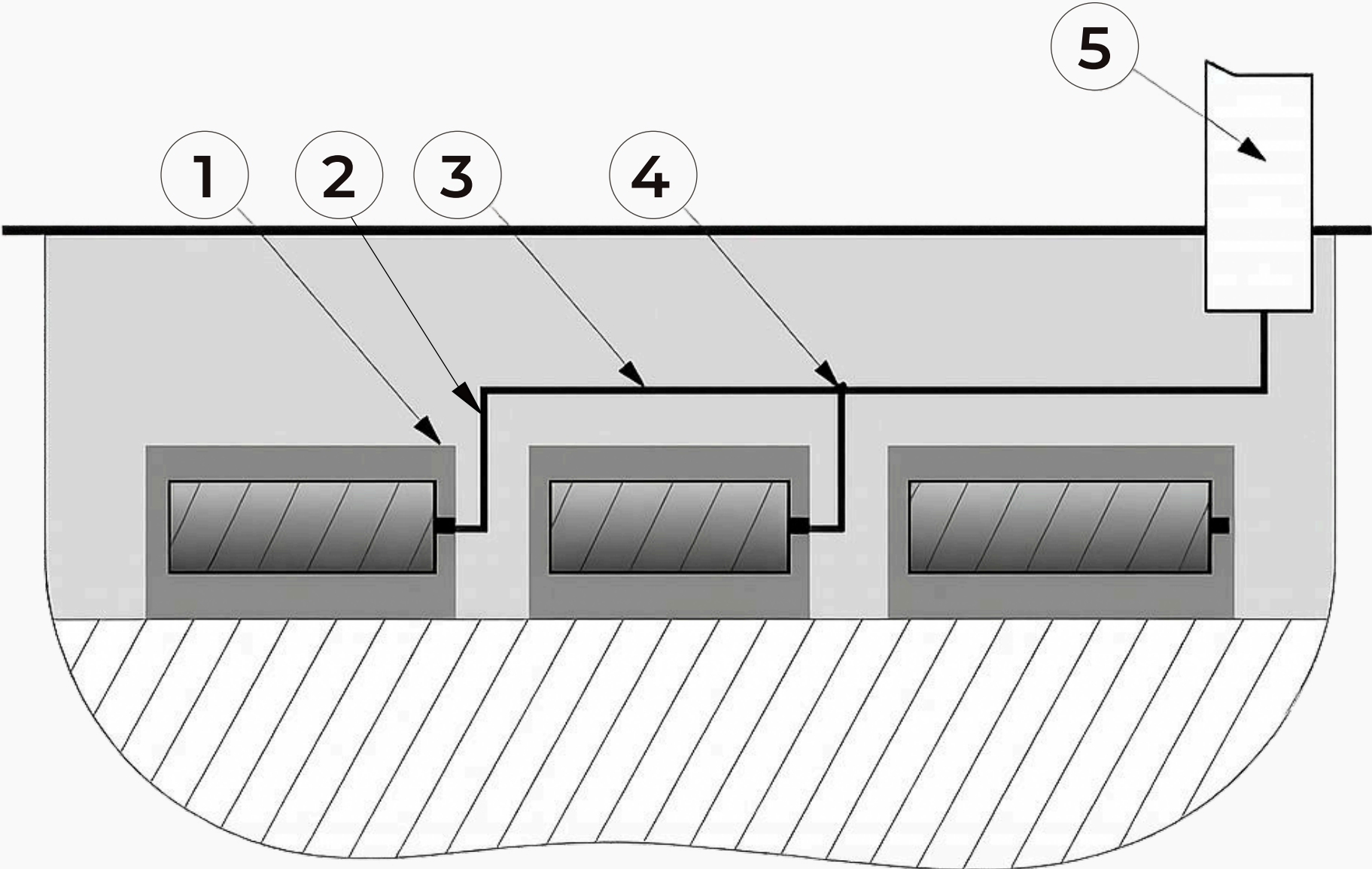


NAME OF PARAMETERS	RATE (± 5%)
DIAMETER, MM	60
TOTAL LENGTH	720; 760
EFFECTIVE LENGTH, MM	600; 710
SURFACE AREA, M2	0,113; 0,134
WEIGHT, KG	6; 6,2
NOMINAL CURRENT LOAD, A	5*, 15***
MAXIMUM CURRENT LOAD, A	6*, 16***
CASING DIMENSIONS *** : -DIAMETER, MM -LENGTH, MM	150-200 2000



INSTALLATION OF ANODIC GROUNDING

- 1 Magnetite anode grounding
- 2 Anode cable
- 3 Connecting or trunk cable
- 4 Cable connection
- 5 Test station



→ INSTALLATION OF ANODIC GROUNDING

- 1 magnetite anode grounding
- 2 Anode cable
- 3 supporting structure
- 4 detent
- 5 vent pipe
- 6 test station

