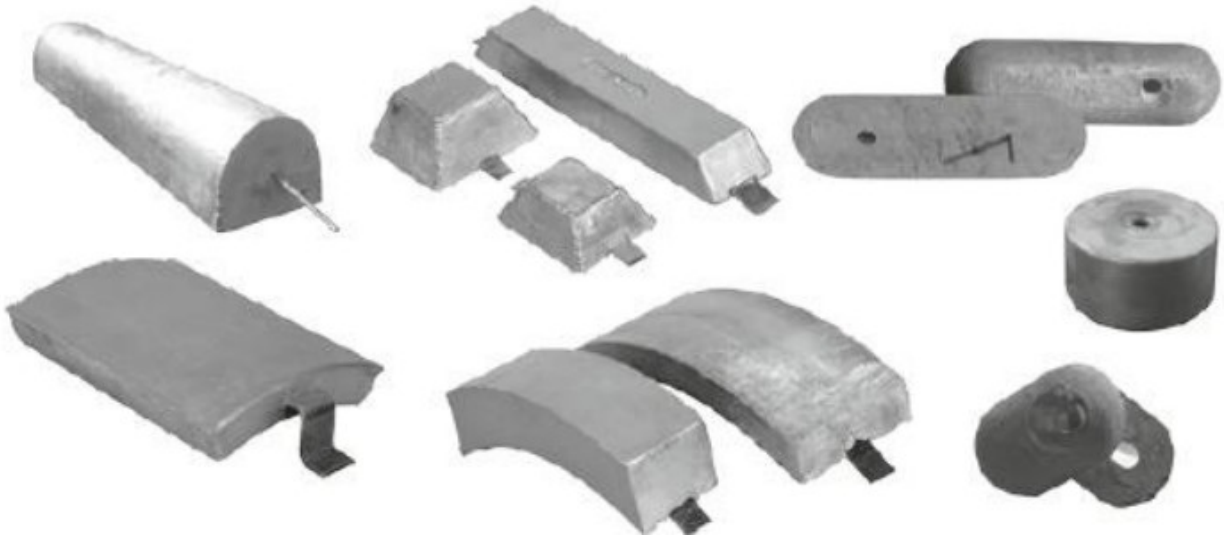
SACRIFICIAL ANODES

Sacrificial protection is a type of cathode protection. A more electronegative metal — sacrificial anode — is attached to the structure to be protected. It dissolves in the environment releasing electric energy and protecting the base structure against destruction. The sacrificial anodes should be replaced once it is dissolved completely, and any contact with the protected structure is lost.

The sacrificial protection is used in cases where supply of energy from outside for provision of cathode protection is obstructed, and installation of special electric lines is economically unsound.

The sacrificial protection is used to fight corrosion of metal structures in sea and river water, ground and other neutral media.

Magnesium sacrificial anodes are designed for sacrificial protection against corrosion of steel structures.



ASCTSA sacrificial anodes are designed for protection of internal surfaces of tanks, oil-settling tanks, separators and other structures. The sacrificial anodes are installed on the bottom of a VST horizontally as an assembly (bunch) of rods connected with each other by means of welding.

Designation

The sacrificial anodes are designed for protection of underwater part of offshore facilities:

- ship and vessel hulls;
- permanent offshore platforms;
- ship vessel ballast tanks;
- VST tanks, oil-settling tanks, harbour installations.



Sacrificial anodes made of zinc alloys are designed for corrosion protection of underwater part of ships' hulls, internal surface of tanks and cisterns, ships, separate hull structures and metal facilities which operate in sea water, and oil-, gas- and gasoline pipelines. P-NOZ-5, P-NOZ-10, P-KOZ-5, P-KOZ-10, P-KOZ-15, P-KOZ-18, P-KOZ-36, PMF.

Sacrificial protection of painted ballast tanks of sea transport ships is used for decreasing corrosion failures on the areas with local damage of paint-and-lacquer coating where pinpoint or pit corrosion is developed when electrochemical protection is absent.

For unpainted surfaces the sacrificial protection decreases the general corrosion rat and prevents any local corrosion failures.

ANODE EARTHING CONDUCTORS

Specifications 3435-028-73892839-2012

"RADUGA" AZP-RA POLYMER ANODE EARTHING CONDUCTOR

Function

AZP-RA anode earthing conductors are designed as a partially soluble element of deep and superficial earthing conductors in the system of electrochemical protection against corrosion of underground metal structures. The products comply with the requirements of Specifications 3435-028-73892839-2012.

TEST POINTS

Designation

TS, TP, TSR, UP, TS.ПСС products are designed for electrochemical protection and monitoring of corrosion condition of pipeline routes and other underground metal structures in accordance with GOST R 51164-98 and GOST 9.602-2005

The products are manufactured for climatic conditions "moderate cold climate 1" (УХЛ 1) according to GOST 15150-69 and are designed to be deployed in the open air.

TSR-G is equipment for route, drainage (in cathodic protection installation drainage points) and anode diagnostics test points located in inhabited localities, compressor stations, gas-distribution stations and distribution points. They are installed in inhabited localities and on the industrial territories on the road surface level and withstand the automotive transport tyre pressure.

"RADUGA" TYPE PIPELINE PROTECTION DEVICES

Function

Pipeline protection device PPD-PA, hereafter referred to as PPD, is designed for draining AC current induced by electromagnetic radiation of high-voltage power transmission lines and other high-voltage sources from underground metal facilities. PPD does not affect the protection potential maintained by electrochemical protection means on the protected facility.

It is recommended to use PPD in locations where there is hazardous influence of power transmission line on the pipeline, in particular:

- when a pipeline and a power transmission line are in parallel;
- in pipeline and power transmission line crossing locations;
- in pipeline and power transmission line approach locations.

DIODE AND RESISTOR UNITS

Function

Diode and resistor units (hereafter referred to as DRU, RDRU) are designed for joint protection of underground structures against corrosion and for elimination of harmful influence of separate protection installations on neighbouring utilities.

DRU, RDRU can also be used as polarized drainage.

PIPELINE PROTECTION UNIT

Function

The pipeline protection unit, depending on the modification, is designed for operation in process flow charts of electrochemical protection with distributed anodes and in flow charts of joint cathodic protection of underground utilities.

The core of PPU is a controlled pulse DC/DC converter which enables automatic stabilization of either total, or polarization potential on the protected facility at the specified cathodic protection current level.

JOINT PROTECTION UNITS

Specifications 3415-004-73892839-2006
Patents No. 48446, 97131

JPU, UPU, DPU

Function

DRU, JPU, UPU are designed for joint protection of underground structures against corrosion and for elimination of harmful influence of separate protection installations on neighbouring utilities.

JPU, DPU, UPU units can also be used as polarized drainage.

CATHODIC PROTECTION DEVICES

HVCPD (HVMECP)

Function

HVCPD device is designed for protection of underground metal structures against soil corrosion and features automatic and manual control of protective potential (HVCPD-A) and only manual control of protective potential (HVCPD-M).

Climatic modification is "moderate" ("У"), placement category 1 according to GOST 15150.

"RADUGA" TYPE SINGLE-PHASE SELF-VENTILATED AC RECTIFIERS

Specifications 3415-007-73892839-2006.
Patents Nos. 79565, 79893, 80852 (listed in the register of OJSC "AK Transneft", OJSC "Gazprom")

SVSPACR, SVSPACR-DD

Function

"Raduga" type self-ventilated single-phase AC rectifiers (hereafter referred to as SVSPACR) are designed for electrochemical (cathodic) protection of underground metal structures (gas pipelines, oil pipelines, public utility facilities and other facilities) against electrochemical corrosion. The design version of the rectifier with digital display is designated as SVSPACR-DD.
They are designed for microclimatic region with moderate climate, deployment in the open air – modification 1 according to GOST 15150.

CATHODIC PROTECTION STATION WITH ELECTRONIC CONTROL

Specifications 3415-007-73892839-2006
Patents Nos. 79565, 79893, 80852

ECCPS

Function

"Raduga" type electronic control cathodic station (ECCPS) is designed for electrochemical (cathodic) protection of underground metal structures (gas pipelines, oil pipelines, public utility facilities and other facilities) against electrochemical corrosion.

It is designed for microclimatic region with moderate climate, deployment in the open air – modification 1 according to GOST 15150.

PULSE CONVERTERS OF "RADUGA" TYPE CATHODIC PROTECTION

Specification 3415-011-73892839-2011 (listed in the register of OJSC "Gazprom", certified by GAZCERT system)
Patent No. 102939, 104305

CPPC-PA, CPPC-M-PA, CPPC-PA-P, CPPC-PA (48/96 B)

Function

Modular design version pulse converters CPPC-PA, CPPC-M-PA based on switched mode power supplies are designed for electrochemical (cathodic) protection of different underground metal structures: main pipelines (gas pipelines, oil pipelines, product pipelines and other pipelines of different functions), utility facilities, storage tanks and other similar facilities located in various soils, including extra aggressive soils.

CPPC-MC-PA

Specifications 3415-039-73892839-2011
Patent No. 102939, 104305

Function

Vessel-type cathodic protection pulse converter of "Raduga" type based on pulse power supplies is designed for electrochemical (cathodic) protection of vessel hulls, ports, shelf zones, oil- and gas-producing platforms against sea-water corrosion by means of a potential shift. Herewith the vessel surface becomes equipotential, and only cathodic proceeds on all of its areas.

DIRECT CURRENT POTENTIOMETER (DCP)

Specifications 3415-023-73892839-2012
Patent No. 120654, 104305

Function

Direct current potentiometer DCP hereafter referred to as "potentiometer"), based on pulse power supply, is designed for electrochemical (cathodic) protection of different underground metal structures: main pipelines (gas pipelines, oil pipelines, product pipelines and other pipelines of different functions), utility facilities, storage tanks and other similar facilities located in various soils, including extra aggressive soils.

AUTOMATIC REDUNDANCY UNIT

ARU

Specifications 3435-042-73892839-2012

Function

The automatic redundancy unit (hereafter referred to as ARU) is designed for automatic switch-over of the main cathodic protection device CPD to the redundant device in case of the main CPD power supply voltage failure or overrun, and in case of the main CPD breakdown (if there is no output voltage).

PDD, PED, RED

Function

Polarized drainage device (PDD) is designed for protection of underground metal structures against corrosion caused by earth currents. The protection is provided by draining of earth currents from an underground metal structure via rail network or negative bus of a substation of tram railway or electrified railway which are strong sources of earth currents. A polarized electric drainage is used if the potential of the underground metal structure as related to the rail network or earth is positive or alternating, and when the potential difference "underground structure/rail" is greater than the potential difference "underground structure / earth".

REFERENCE ELECTRODES

Function

NPRE is designed for provision of electrolytic contact with soil in circuits for determination of underground metal structure corrosion protection efficiency and support of cathodic protection rectifier operation in automatic measured potential difference maintenance mode and for measurement of the protected structure polarization potential value using portable instrumentation.

INDICATOR WIRE UNIT IWU-2

Function

Indicator wire unit IWU-2 is designed for determination of corrosion hazard and efficiency of electrochemical protection against corrosion of underground steel structures without opening them.

GUIDE RINGS, DIELECTRIC TYPE

DGR-SPACERS

Specifications 1390-020-73892839-2011

Function

Dielectric guide rings (DGR-spacers) are designed for construction of crossovers up to 1420 mm in diameter (inclusive), laid in the protective culvert under highways, railways and other engineering structures in all climatic zones at temperatures from -40°C to +50°C (inclusive).

DGR-spacers are designed for protection of insulation layer of pipelines during pulling. It is used as a dielectric insulator between pipeline and culvert.

LINING STRIP

Specifications 2291-030-73892839-2012

Function

Lining strip is designed for protection of insulating coating of steel pipelines and polymer pipelines without insulation coating against mechanical damages during pulling over water barriers and for collection of dielectric safety rings used for pulling of the operating pipeline through the culvert (casing) when constructing an underground crossing of a motorway, railway or other water barrier, including that implemented by method of deviated "pipe-in-pipe" drilling.