DAK

About the company
Specialization

The company specializes in complex solutions in the field of design, construction, production, installation and commissioning of equipment for traction and distribution power supply from 0.4 to 154 kV inclusive. During the period from 2005 to 2020 the company implemented more than 300 projects in the field of construction, modernization and reconstruction of transport and industrial objects.

About the company History

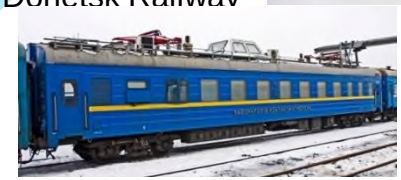
2009 Production of SAHS (ВАБ-206)

2010 Production base Peschanka

2011-12 General contractor of construction of traction substation of Grebenka - Poltava-Krasnograd - Lozovaya site

2006-07 Installation and adjustment of traction substation Poltava

2004-05 OSTW of Donetsk Railway



About the company
Team

Our success is based on the team of enthusiastic people, consisting of both experienced consummate employees with more than 20 years of experience in the industry and young ambitious professionals. 75 percent of employees have higher technical education, the number of staff is 150 people. The company implements comprehensive educational and staff training programs. Students of the specialized universities and technical schools undertake an internship on the basis of the enterprise regularly.

About the company

Modern production base

For the production of electrical equipment, the company has 5,500 square meters of modern production facilities that are equipped with new, high-performance equipment from leading European companies. There is all the necessary equipment, instrumentation pool, as well as the electro technical laboratory ETL for performance of production tests.

About the Company

Complete Production Cycle

1

2

3

4

5

6

About the Company

Services

Design of power supply objects up to 150 kV

Turnkey construction and reconstruction of power supply objects

Installation and adjustment of electrical equipment

Service and guarantee maintenance

Training of the Customer's employees

Implemented Projects

During the period from 2005 to 2020 the company implemented more than 200 projects in the field of construction, modernization and reconstruction of traction power supply system and other industries objects:

The most significant of them are:

- 2008 – construction of the traction substation Poltava Yuzhnaya 110/27,5/10, POS-27,5 kV – 2 items;
- 2009 – construction of the traction substation Kolkheti 35/10/3,3 Georgian Railway, POS-3,3 kV – 2 items;
- 2009 – construction of the combined traction substation Maiskaya 110/27,5/10/3,3 Yuzhnaya Railway;
- 2009-2010 – electrification of the section "Debaltsevo - Kommunarsk - Rodakovo", 100 km long, Donetsk Railway. Turnkey construction of the traction substation 35/10/3,3 – 3 items, POS 3,3 kV – 2items;
- 2010 – construction of the traction substation Zvyagel 110/27,5/10 Yuzhno-Zapadnaya Railway;
- 2011-2012 – electrification of the object “Implementation of high-speed traffic of passenger trains on the section "Poltava - Krasnograd - Lozovaya"of Yuzhnaya Railway, 176 km long, Turnkey construction of the traction subsection 110/27,5/10 – 6 items, POS 27,5 kV – 4 items;
- 2011-2012 – construction of the converter station clustering points 27,5/3,3 kV of converter station Lozovaya of Yuzhnaya Railway;
- 2013 – electrification of berths of the new container terminal of SE "Odessa Commercial Sea Port";
- 2014 – supply of equipment for the Samara Metro, RF;
- 2015-2018 – construction of the traction substation Kremenchug 150/27,5/10 of Yuzhnaya Railway.
- 2016 – construction of the object Gas Reciprocating Cogeneration Plant for power supply of "SagatEnergy" LLP Kazakhstan;
- 2016 – reconstruction of CSG (3SG -3,3 kV of the traction substation of Georgian Railway
- 2016-2017 – supply and supervision of equipment for the Azerbaijan Railway– POS 3,3kV, VAB-206, supply of equipment and installation and commissioning works in SG (РУ)-825 in the Kharkov subway
- 2019-2020г. - reconstruction of 4 TS with replacement of equipment of Georgian railways, supply of PS 3.3 kV and HSCB-206 to Azerbaijan railways, supply of OS 6 kV, Kp Dor "Aul's'kyy Vodovid“,Supply and installation of modular TS 3-1000-6 / 600 UET Kharkiv, supply of OS 10 kV, 0.4 kV, the South-Western Railway of Ukraine, reconstruction of SWG600V TP UET of Vinnytsia, Kropyvnytskyi, Kremenchug, retrofit of cubiles 600V (replacement of HSC[illegible]PAE cabinet) ,UET Vinnytsia, Kremenchug.

International Competences

RS Kolkheti 35/10/3,3 Georgian Railway

Rehabilitation of SG-3,3 kV RS Khresili, Georgian Railway

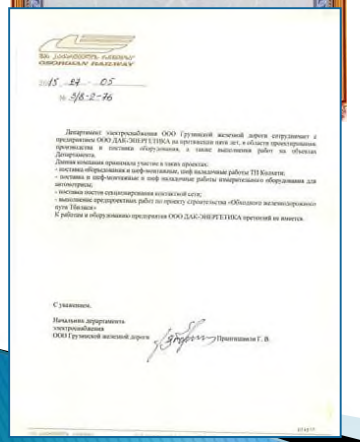
POS-3,3 kV in Baku city, Azerbaidzhan Railway

Equipment for power supply for machine-building factory in Atyrau city, Kazakhstan

Responses and Letters of Acknowledgment

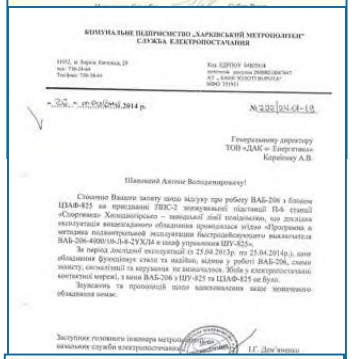
Diploma of UZ "For participation of LLC" DAK-ENERGO" in successful electrification of the Poltava-Lozovaya site within the programs of preparation and holding of the final part of the European Football Championship 2012 in Ukraine."

Diploma of UZ "For initiative, significant contribution to the organization of mass production and supplies for railway of modern high-tech equipment."



Response on the supplied products of the **Georgian Railway.**

Response on the supplied products of the **Azerbaijan Railway**

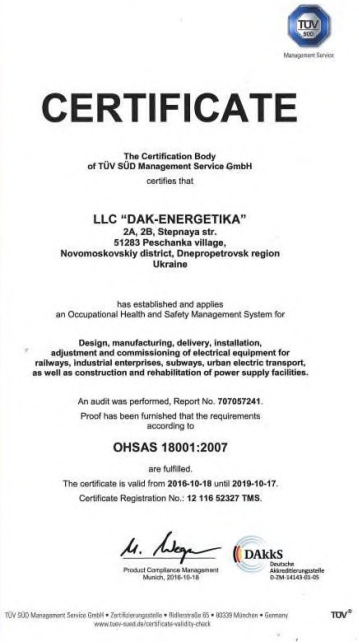


Response on the supplied products and performed works of the **Kharkov Subway**

Response on the supplied products and performed works of the **Dnepropetrovsk City Electric Transport**

Certificates

When developing the whole spectrum of equipment, the main emphasis is made on low maintenance, reliability and a high degree of automation of all equipment produced by our company. The quality management system of the company complies with the international standards ISO 9001: 2015, ISO 14001: 2004 and OHSAS 18001: 2007. All the necessary permits and licenses are available for the works in progress.



Equipment Produced

Equipment for railways

- **Complete AC and DC traction substations**
- **Mobile traction substations of 27.5 and 3.3 kV**
- **Sectioning points and parallel connection points of 27.5 and 3.3 kV**
- **converter station clusters 27.5 / 3.3 kV**
- **Points of wagons heating supply**
- **Switch-gear cubicles 27.5 kV**
- **Switch-gear cubicles 3.3 kV**
- **ACS (SCADA) equipment**
- **Diagnostic devices for overhead system**
- **Disconnectors for overhead system**

Equipment for subways

•Switch-gear cubicles :

- SGC of "KS" series on voltage 825 V
- SGC of «KP-610» series on voltage 6-10 kV

•Auxiliary blocks and cabinets of control, distribution and automation based on low voltage electrical switchboard of DNEPR series
•Rectifiers
•Switches automatic high-speed VAB-206»
•electric traction network equipment 825 V
•Retrofit kit

Equipment for city electric transport

- **Traction substations of direct current of modular execution type ТПМ-ГТ**

•switch gear cubicles:

- SGC of «K» series on voltage 600 V , SGC of negative rail 600 V
- SGC of «K-213» series on voltage 6 (10) kV

•Rectifiers.
•Auxiliary blocks and cabinets of control, distribution and automation based on low voltage electrical switchboard of DNEPR series
•Switches automatic high-speed VAB-209»
•Feeder input cabinets FIC-600 V
•Retrofit kit

Equipment for industrial facilities

•Switch-gear cubicles :

- SGC of «K-35 B» series on voltage 35 kV
- SGC of «KSO-393» series on voltage 6 (10) kV
- SGC of «K-213» series on voltage 6 (10) kV
- SGC of «KP-610» series on voltage 6 (10) kV

•Low-voltage complete devices 0,4 kV of DNEPR series
•Complete transformer substation
•Rigid busbar of SG 110-220 kV
•Solar inverter substations
•Gas-generator ES and mini-TEC
•Metal supports and frames

Complete traction substations of alternating current of 27,5 kV

The complete traction substation of alternating current 27.5 kV consists of sets of functional blocks, modules and electrical equipment, united by bus and cable connections, a single control system and is designed to provide electric power to the railway electrically propelled vehicle through the traction network of the railway.

Typical composition of traction substation equipment of alternating current with voltage of 27.5 kV in block - modular design:

- Module of closed switchgear 10 kV (Module CSG-10 kV) - 2 items.
- Module of closed switchgear of signaling, centralization and blocking (Module CSG -10 kV SCB) - 1 item.
- Module of closed switchgear 27.5 kV (Module CSG-27.5 kV) - 2 items.
- Auxiliary module (Module A - 1 item.)
- Module of auxiliary transformers (Module AT) - 1 item.
- Module of general substation signaling (Module GSS) - 1 item.
- Modules of general substation control of the 110 kV distribution device (35 kV) (Module GSC -110 kV) - 1 item.
- Module "Accumulator" - 1 item.
- Module of the diesel-generator set (Module DGS) - 1 item.
- Module "Workshop" - 1 item.
- Module "Service" - 1 item.

Complete traction substations of direct current of 3,3 kV

The complete traction substation of direct current 3.3 kV consists of sets of functional blocks, modules and electrical equipment, united by bus and cable connections, a single control system and is designed to provide electric power to the railway electrically propelled vehicle through the traction network of the railway.

Typical composition of traction substation equipment of direct current with voltage of 3.3 kV in block - modular design :

•Module of closed switchgear 35 kV (Module CSG -35 kV) – 2 items.
•Module of closed switchgear 10 kV (Module CSG -10 kV) - 2 items.
Module of closed switchgear of signaling, centralization and blocking (Module CSG -10 kV of SCB) - 1 item.
•Module closed switchgear 3,3 kV (Module CSG -3,3 kV) – 2 items.
•Module of semiconductor rectifier set (Module SCRS)– 2 items.
• Auxiliary module (Module A - 1 item.)
• Module of auxiliary transformers (Module AT) - 1 item.
• Module of general substation signaling (Module GSS) - 1 item.
• Modules of general substation control of the 110 kV distribution device (35 kV) (Module GSC -110 kV) - 1 item.
• Module "Accumulator" - 1 item.
Module of the diesel-generator set (Module DGS) - 1 item. Module "Workshop“, Module “Service” - 1 item of each, draft reactor tube – 1 item.

Mobile Traction Substations

- The mobile traction substation is a block-modular type equipment located on railway platforms.
- For the rapid replacement of stationary substations upon their failure due to an accident, a natural disaster, as well as in the planned withdrawal of stationary substations, mobile traction substations are used for reconstruction or modernization. They also make it possible to solve the problem of increase in traction power of certain sections of the railway lines during the period of intensive cargo transportation.

Typical composition of mobile traction substation of alternating current 27.5 kV:

- Platform with high-voltage switchgear;
- • Platform of traction transformer
- • Platform of the closed distribution module 27.5 kV
- • Platform with a module of general substation control and signaling with a domestic premise.

Typical composition of the equipment of a mobile traction substation of direct current 3.3 kV:

- 35 kV input platform and traction transformer;
- • Platform of SCRS module and draft reactor
- • Platform of traction SG-3,3 kV
- • Platform with control module and service module

Points of Sectioning and Parallel Connection

Points of sectioning of alternating current 27.5 kV and direct current 3.3 kV for railways

Points of railroad overhead system sectioning (POS) are used on electrified railways.
SPN are designed for electrical connection of sections of the overhead system of double-track and single-track sections of railways and protection against overload and short-circuit currents.

In the Figures Sectioning points of alternating current 27.5 kV (left) and direct current 3.3 kV (on the right)

Points of Sectioning and Parallel Connection

- Points of parallel connection of the railway overhead system (PPC) are designed for parallel connection of the overhead system of double-track sections of railways.
- PPCs ensure the selectivity of feeder protection work.

Points of Converter Station Clustering

Points of clustering are intended for alternate supply of working direct current and 27.5 kV alternating current with a frequency of 50 Hz to switchable sections of the overhead system of converter stations. PC of module type are used for newly developed converter stations and during the reconstruction or replacement of PC of open type that have reached the established service life.

Points of Converter Station Clustering

Switch module of the point of converter station clustering of type PCS-B-3,3/27,5

Switch module of the point of converter station clustering of type PCS-B-3,3 / 27,5 ТУ У31.2-33165522-26: 2011 is designed to switch the type of current in the overhead system without load at the converter stations of 3.3 kV DC and 27.5 kV AC of electrified railways.

The switch module is designed for newly built, as well as modernization of existing clustering points of closed and module type.

The switch consists of a high-voltage and low-voltage node.

The high-voltage node includes a contact system made on the basis of serial vacuum chambers (as power switching elements).

The composition of the low-voltage node includes a highly reliable motor-reducer and switch control circuits.

The switch with the drive is placed on a technological trolley with vertically oriented detachable power contacts.

Points of Converter Station Clustering

Module of the converter station protection device

- The module of the ТУ У converter station protection device is manufactured in accordance with 31.2-33165522-035: 2011 and is designed to protect electrical equipment of 3.3 kV DC of traction substations and electric propelled vehicles at the converter station from ingress of 27.5 kV alternating current.
- The device is connected to the DC buses the clustering points and non-switched sections of the DC overhead system adjacent to the AC sections. When an AC voltage of 27.5 kV hits the DC network, a device is triggered, which ensures that the contact wire closes onto the traction rail. This causes switching off of the high-speed circuit-breaker and the vacuum circuit breaker of the respective feeders of the traction substation. The protection device of the converter station is supplied as part of the cell similar to the cell of the PCS-B switch. The device is designed for 150 cycles of operation.

Power supply of wagon heating points

Device of power supply for the point for heating the wagons (WHP) is designed to supply power to the electric heating elements of the boiler in wagons with combined heating with a single-phase alternating current of 3000 V with a frequency of 50 Hz or DC in parking lots, depots and storage yards.

Advantages of using WHP

- 1) Reliability and stability of the heating of the wagon spaces in the parking lot.
- 2) Eco-friendliness when using electricity to heat water in a boiler instead of coal.
- 3) Significant reduction of costs due to switching to electricity for heating the wagon park.
- 4) Electrical safety

Modular equipment for traction substations of railway

For electrification the AC and DC railways, DAK-ENERGO manufactures traction power equipment in block-modular design. Traction substations in a modular design are assembled from standard modules containing ready-made functional blocks.

The functional block is a functionally and constructively finished product consisting of the assembly of cabinets, panels, cells, primary sensors, microprocessor

controllers united by common power conductor, secondary circuits and power

frame. The functional block can be placed both in the module and in the capital building.

The module is a fully finished product tested in the factory, not requiring internal installation on the site. The standard dimensions of the modules are (6000 (4800) x 3200 x 3900 mm). The use of modules with standard dimensions simplifies significantly the construction and installation work at the facility.

Each module includes:

- function block according to the purpose of the module (for example, PVA, CSG-27.5 kV, etc.)
- auxiliary distribution board;
- auxiliary technological systems;
- own lighting system:
- own heating system:
- fire alarm smoke detectors, for inclusion in the fire alarm system;
- door opening sensor for inclusion in the alarm system;
- components of the traction substation ACS, according to the specification for the functional block;

Module of closed switchgear of 27,5 kV

Modules of the switchgear 27.5 (35) kV are designed for receiving and distribution of electric power of alternating current of industrial frequency with a voltage of 27.5 kV on alternating current traction substations of railways.

Technical characteristics:

Parameter	Value
Nominal voltage: Conducting part – grounded construction, kV	27,5; 35
Maximum operating voltage: Conducting part – grounded construction, kV	40,5
Nominal voltage between the main (prefabricated) buses of SG -27,5 kV, kV	27,5
Maximum operating voltage between the main (prefabricated) buses of SG-27,5 kV, kV	29,0
Nominal current of the main circuits of cabinets of SG -27,5 kV, A	1250; 2000
Nominal current of main (prefabricated) buses, A	1250, 2000
Conventional thermal current (short-time), кА, not less Note - The time for the thermal current flow for main circuits is not more than 3 s, for grounding knives - not more than 1 s	32,8; 41
Nominal current of electrodynamic resistance of the main circuits of switchgear cabinets (amplitude), kA NOTE - If there are no restrictions on current transformers	100
Nominal voltage of auxiliary circuits, V: - direct current - alternating current (single-phase and three-phase)	 110; 220 220

Module of closed switchgear of 6(10) kV

Modules of the 6 (10) kV switchgear are designed for receiving and distributing electric energy of an alternating current of industrial frequency with voltage 6 (10) kV on traction and transformer substations of railways.

Technichal characteristics

Parameter	Value
Nominal voltage, kV	6;10
Greatest operating voltage, kV	7,2; 12,0
Nominal current of the main circuits of the closed switchgear of CSG-6(10) kV, A	630; 800;1250;1600
Nominal current of disconnection of switch built-in the closed switchgear CSG-6(10) kV, кА	20; 25; 31,5
Conventional thermal current (short-time), кА, not less Note - The time for the thermal current flow for main circuits is not more than 3 s, for grounding knives - not more than 1 s	20; 25; 31,5
Nominal current of the electrodynamic stability of main circuits of SGC-6(10) kV (amplitude), кА NOTE - If there are no restrictions on current transformers	51; 63; 81;102
Nominal voltage of auxiliary circuits, V: - direct current - alternating current (single-phase and three-phase)	 110; 220; 100; 220;

Module of the closed switchgear of signaling, centralization and blocking

Designed for supply of lines of automatic blocking with a voltage of 6 or 10 kV.

Technichal characteristics

Parameter	Value
Nominal voltage, kV	6;10
Greatest operating voltage, kV	7,2; 12,0
Nominal current of the main circuits of the closed switchgear CSG-6(10) kV, A	630; 800; 1250; 1600
Nominal current of disconnection of switch built-in the closed switchgear CSG-6(10) kV, кA	20; 25; 31,5
Conventional thermal current (short-time), кA, not less Note - The time for the thermal current flow for main circuits is not more than 3 s, for grounding knives - not more than 1 s	20; 25; 31,5
Nominal current of the electrodynamic stability of main circuits SGC-6(10) kV (amplitude), кA NOTE - If there are no restrictions on current transformers	51; 63; 81;102
Nominal voltage of auxiliary circuits, V: - direct current - alternating current (single-phase and three-phase)	 110; 220; 100; 220;

Auxiliary module

Designed for the use as a 0.4 kV switchgear for AC auxiliary needs on traction substations of railways.

Technichal characteristics:

Parameter	Value
Nominal supply voltage of alternating current, V	380/220
Frequency of supply voltage, Hz	50
Capacity of power supply transformers (AT), kW	250 or 400
Capacity of reserve power supply transformers ART, kW	63 or 100
Nominal operational DC voltage, V	=220
Maximum current of charge devices, A	80

Module of diesel generator set

Designed for backup power supply of the high-voltage line of the SCB and feeders of the guaranteed power supply for the auxiliary needs of the traction substation (TS). A diesel power station in the container design with the capacity of 100 kVt of the second degree of automation should be used in the composition of the modular DGS with the switchgear block.

Technichal characteristics

Parameter	Value
Nominal capacity kW / kWA	100/125
Current type	Alternating three-phase
Nominal frequency, Hz	50
Nominal output voltage, V	400 or 230
Nominal current, A	180 or 314
Neutral mode	Solidly-grounded or isolated
Degree of automation of the power unit in accordance with GOST 14228	2

Module of auxiliary transformers

Designed for placing auxiliary transformers and supplying with alternating current of own needs of traction substations of main railways.

Technichal characteristics

Parameter	Value
Current type	50 Hz
Nominal supply voltage 50 Hz, kV	10 (6)
Nominal output voltage 50 Hz, kV	0,4 / 0,23
Nominal output power of one transformer, kVA	250(400)

Auxiliary modules

The auxiliary modules "Workshop", "Service", "Household" are designed for maintenance and repair work on traction substations of railways.

Module "Service" includes facilities for cooking and eating, for rest and sleep. It can be both stand-alone, and connected to the adjacent modules with both the left and the right walls.

Module "Workshop" allows to carry out minor repairs of traction substation equipment. It has racks and a workbench with a set of metalwork and power tools.

Module "Household" provides the necessary complex of sanitary and hygienic services to working personnel.

In the module there is a cloakroom for 4 lockers, a shower room with a boiler for 300 liters, a toilet with a water tank of 0.5 m3

Switchgears of alternating current:

SGC of “KP-610” series of 6 (10) kV voltage

- Medium voltage switchgears KP-610, used in all areas of power generation,
- transmission and distribution:
- • as main and auxiliary switchgears;
- • in power plants, including nuclear power plants, for commissioning and
- distribution of electric power of an alternating current to consumers of own needs;
- • at oil refineries;
- • in electric installations of power systems of industrial enterprises, transport and agriculture.

Main technichal characteristics

Parameter	Value
Nominal voltage, kV	6; 10
Maximum operating voltage, kV	7,2; 12,0
One-minute test voltage, kV («phase-to-phase», «phase-to-ground»)*	32; 42
Nominal current of the main circuits of cabinets of SGC, A	630; 800; 1250; 1600
Nominal current of prefabricated buses, A	1600
Nominal current of diconnection of switch built-in into the SGC, кА	16; 20; 25; 31,5
Conventional thermal current (short-time), кА, not less**	16; 20; 25; 31,5
Period of themal current flow, s, not more	3
Nominal current of electrodynamic stability of the main circuits of cabinets of SGC, кА**	50; 63; 80
Nominal voltage of auxiliary circuits: Direct current, V Alternating current, V	110^{+10}_{-20} ; 220^{+20}_{-30} 100^{+10}_{-20} ; 220^{+20}_{-30}
Overall dimensions of cabinets (WxDxH), mm, not more	600x1050x2190

Switchgears of alternating current:

SGC of “KSO-393” series and K-213 series of 6 (10) kV voltage

Medium voltage switchgears KSO-393 and K-213 used in all areas of power generation, transmission and distribution :

- **as main and auxiliary switchgears;**
- **in power plants for commissioning and distribution of electric power of an alternating current to consumers of own needs;**
- **for supply of SCB devices;**
- **in electric installations of power systems of industrial enterprises, transport and agriculture.**

Parameter	Value
Nominal voltage, kV	6; 10
Maximum operation voltage, kV	7,2; 12,0
One-minute test voltage, kV («phase-to-phase», «phase-to-ground»)*	32; 42
Nominal current of the main circuits of cabinets SGC, A	630, 800; 1000, 1250
Nominal current of prefabricated buses, A	630, 800; 1000, 1250
Nominal current of open wire fuse, A	6,3; 10; 16; 20; 25;31,5; 40; 50; 63; 80;100; 125; 160; 200
Nominal current disconnection of switch built-in into the SGC, кА	13,1; 16; 20; 25; 31,5
Conventional thermal current (short-time), кА, not less**	13,1; 16; 20; 25; 31,5
Period of themal current flow, not more - For main knives, s - For grounding knives, s - For load-break switches, s	 3 1 1
Nominal current electrodynamic stability of the main circuits of cabinets of SGC, кА**	51,0; 63; 81,0; 102
Nominal voltage of auxiliary circuits: Direct current, V Alternating current, V	 110^{+10}_{-20} ; 220^{+20}_{-30} 100^{+10}_{-20} ; 220^{+20}_{-30}
Overall dimensions of cabinets (WxDxH), mm, not more	600/ 900/ 2200

Low-voltage switch gears cubicles SGC of "DNEPR" series

Low-voltage switch gear cubicles of "DNEPR" series (hereinafter referred to as CTS "DNEPR") are intended for reception and distribution of electrical energy of a three-phase alternating current with a frequency of 50 and 60 Hz with a voltage of 0.4 kV, control of electrical equipment and its protection from short circuits and overloads.

Main technichal characteristics:

Nominal voltage of isolation (Ui) Nominal operating voltage (Ue)		1000 V to 660 V
Nominal current, A I_n		To 6300A
Conventional thermal current, кА/1 sec I_{cw}		To 100
Electrodynamic current, кА I_{pk}		To 220
Nominal conditional short-circuit current, кА I_{cc}		To 100
Type of grounding system		TN-C / TN-S / TN-C-S
Level of protection	IP30, IP31, IP40, IP41, IP54	GOST 14254 МЭК 60529, EN 60529

Switch gears of direct current

SGC of “KS” series for a voltage of 3,3 kV

Switch gear cubicles of direct current with a voltage of 3,3 kV, ТУ У31.2-33165522-021: 2010, are designed for the needs of traction power supply of electrified railways.

- The cells of the switch gear cubicle of KS-3,3 series are stationary cells
- for unilateral servicing. For the convenience of servicing the high-speed
- circuit breaker, it is possible to extend it into the service corridor. The cells
- of the KS series are conventionally equipped with high-speed switches of
- the VAB–206 series, which do not require special adjustments and settings
- during the entire lifetime, just periodic replacement of arc extinguishing
- contacts. The cells with switches are equipped with microprocessor
- protection and automation devices.

High speed automatic switches of “VAB-206” series for railway.

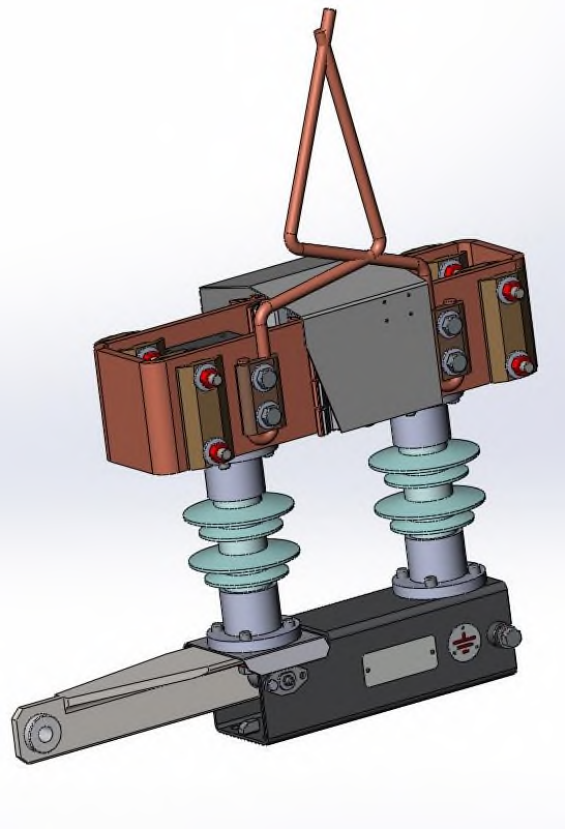
High-speed automatic switches of “VAB-206-4000 / 30" series are designed for protection against overloads and short-circuit currents, as well as switching of electrical energy in DC circuits of traction substations and linear devices for traction power of electrified railways with a nominal voltage of 3300 V.

Main advantages of switches of this series

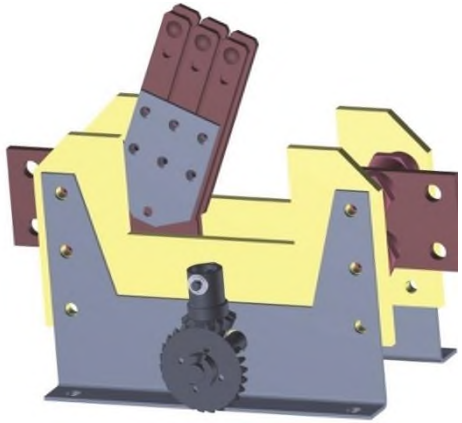
- High switching and mechanical resource;
- Built-in current relay;
- Environmentally friendly materials;
- Ability to operate both in inductive and in low-inductance circuits;
- Small size and weight;
- Serviceability;
- Can be installed one per connection

Disconnectors of 3,3 kV voltage

A disconnector of a cutting design of a direct current is intended for switching on and switching off of unloaded sections of circuits of direct current under voltage. Designed with a grounding knife.



Parameter	Value
Nominal voltage, kV	3,3
Maximum operating voltage, kV	4
Nominal current of the main circuits, A	3000, 4000
Conventional thermal current, кА, not less	25
Period of thermal current flow, s	3
Current of electrodynamic withstand, кА	51
Dimensions, mm -width -length -height	 330 800 905



Retrofit Kit 3,3 kV

- For the reconstruction of 3.3 kV switchgears at traction substations, our company has developed and implemented a retrofit kit, designed with all modern requirements for reliability and safety of operation of traction power supply equipment.
- The kit consists of:

CS VAB-206

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Control cabinet SHUF-3,3

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Installation kit

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View after installation of retrofit-3,3 kit

Overhead System Diagnostic Devices

Overhead System Test Wagon (CNTW)

The OSTW can be used for:

- contactless measurement of position of contact wire relative to the current collector axis;
- contactless measurement of height of the main rods of retainers relative to the contact wire;
- measurement the compression force of current collector on the contact wire;
- measurement of height of the right and left sides of the wagon relative to the axles of wheel sets;
- measurement of the distance traveled;
- measurement of the speed of movement (for every 20 m of distance traveled);
- measurement of the voltage in the overhead system in the range from 2.4 to 4 kV DC and from 19 to 29 kV AC at 50 Hz;
- outdoor temperature measurement.

Overhead System Diagnostic Devices

Device for tracking the parameters of contact wire (DTP CW)

The device for tracking the parameters of the contact wire "DTP CW" is designed for contactless measurement of the geometric parameters of the suspension of contact wires of electrified sections of railways. "DTP CW" is installed on rail motor vehicles designed for short-term trips with the purpose of carrying out repair and restoration works and monitoring the status of the overhead system within the framework of overhead system zone.

Technichal characteristics:

- no more than 4 simultaneously measured contact wires;
- contactless measurement of current position of height of the contact wires above the level of the rail heads in the range from 5400 to 6900 mm;
- contactless measurement of current position of displacement of the contact wires (zigzag and take-off) relative to the current collector axis in the range from -600 mm to 600 mm;
- automatic or manual fixation from the control panel of the contact system support position and contactless measurement of height and displacement at the fixation points on the contact wire supports;
- measurement of speed of the ADM motor vehicle in the range from 0 to 100 km / h with a period of 1 meter of track and measuring the distance traveled;
- outdoor temperature measurement.

Contacts

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