



LIMITED LIABILITY COMPANY

NIEFA-ENERGO



Saint-Petersburg, Russia



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Chairman of the Board
of Directors
Dr. Alexandr Mizintsev



General Director
Andrey Tiurikov

Dear friends!

The development of electrical engineering, electronics and information technologies is the basic element of the technological progress in the Russian Federation.

NIIEFA-ENERGO, LLC is one of the leading suppliers of products, services and integrated solutions utilized for the modernization of key Russian industries. The main area of expertise is power distribution and conversion systems and automation of the processes.

On every process stage we use cutting edge technologies, which ensure high quality of the products and minimize time required to launch new products. We use our best efforts to offer integrated solutions as necessary to satisfy all Customer's requirements. In doing so, we always adhere to the company's basic principle: "Supplying high quality equipment of any complexity on a turn-key basis". NIIEFA-ENERGO is a technology partner of quite a few leading global electrotechnical companies and is involved into on-going long-term cooperation programs with research, design and educational institutions, as well as OEM suppliers. Production processes are based on the results obtained during the joint researches, and, therefore, NIIEFA-ENERGO is capable to offer the most up-to-date solutions to its clients.

Our company is a dynamically developing enterprise and takes an active part in the modernization of the Russian economy.

We hereby express our appreciation for the confidence and support to all the companies that worked and are still working with NIIEFA-ENERGO.

We are open to a mutually beneficial cooperation and look forward to establishing a long-term fruitful partnership.

A.V. Mizintsev

A.M. Tiurikov



Administration and engineering buildings of NIEFA-ENERGO

NIEFA-ENERGO, LLC was founded in 2000 on the basis of one of major Russian scientific research centres FGUP "NIEFA named after D.V. Efremov".

Objectives and tasks: provision of modern low and medium voltage electric equipment for industry and electric transport.

Potential: highly qualified specialists; powerful scientific and technological infrastructure with modern technologies, testing centre for electric equipment.

Key areas of operations: conducting a range of research, engineering, design, manufacturing, installation, start-up and adjustment, warranty and maintenance service work for electric equipment; package delivery of equipment and turnkey power-supply facilities commissioning.

The company's quality management system is certified for compliance with GOST ISO 9001-2011 and ISO 9001:2008.

The use of up-to-date of computer-assisted design systems makes it possible to reduce time required to go from the beginning of the product development to batch manufacturing. All products released have all the necessary certificates and statements of compliance.



Metal workshop



Assembly workshop

MEDIUM VOLTAGE SWITCHGEARS

AC MEDIUM VOLTAGE SWITCHGEARS 6, 10, 20 AND 35 kV

AC switchgears from 6 up to 35 kV are designed for distribution of the electric energy of 3-phase alternating current of industrial frequency in the electrical networks.

The customer can select any of the following switchgears modifications with fixed or withdrawable circuit-breakers.



Switchgear panels 6, 10 and 20 kV on the basis of KSO Micron series and PSWG Omega series

One-side access, indoor installation, air insulation, complete with fixed (KSO) or withdrawable (PSWG) vacuum circuit-breakers BB/TEL or SION (main circuit current up to 3150 A for 6 and 10 kV, up to 2500 A for 20 kV).



K-199 switchgear from 6 up to 20 kV

One-side access, indoor installation, solid and SF₆ gas insulation, complete with fixed 3AH vacuum circuit-breakers and three-positions disconnectors (main circuit current up to 2500 A). Manufactured under Siemens OEM-contract.



K-201 switchgear 35 kV

One-side access, indoor installation, SF₆ gas insulation, complete with fixed 3AH vacuum circuit-breakers and three-position disconnectors (main circuit current up to 4000 A). Manufactured under Siemens OEM-contract.

AC MEDIUM VOLTAGE SWITCHGEARS 2x25 AND 25 kV

AC switchgears 2x25 and 25 kV are designed for distribution of the electric energy alternating current 25 kV and 2x25 kV at AC railway traction substations.

The customer can select any of the following switchgears modifications with air insulation or SF6 gas insulation.



1S-2x25 kV switchgear

One-side access, indoor installation, air insulation, complete with vacuum two-pole circuit-breakers (main circuits current up to 1250 A).



1S-25 kV switchgear

One-side access, indoor installation, air insulation, complete with vacuum one-pole, two-pole and three-pole circuit-breakers (main circuits current up to 2000 A).



K-200 switchgear 25 kV

One-side access, indoor installation, SF6 gas insulation, complete with 3AH vacuum circuit-breakers and three-position disconnectors (main circuit current up to 4000 A).



Unit of open switchgear 25 kV

Outdoor installation, air-insulated, with vacuum circuit breakers (main circuit current up to 2000 A).

DC MEDIUM VOLTAGE SWITCHGEARS UP TO 3.3 kV

DC switchgears up to 3.3 kV are designed for distribution of the electric energy direct current at DC railway, undergrounds, trams and trolleybuses traction substations.

The customer can select any of the following switchgears modifications with fixed or withdrawable circuit-breakers.



KV-3.3 kV switchgear

One-side access, reduced dimensions, indoor installation, air insulation, complete with withdrawable HSCB type VAB-206 (main circuit current up to 8000 A).



KV-825 V switchgear

One-side access, reduced dimensions, indoor installation, air insulation, complete with withdrawable HSCB type VAB-206 (main circuit current up to 6300 A).



KV-600 V switchgear

One-side access, reduced dimensions, indoor installation, air insulation, complete with withdrawable HSCB type VAB-209, VAB-211 (main circuit current up to 4000 A).



1S-825 V switchgear

One-side access, reduced dimensions, indoor installation, air insulation, complete with fixed HSCB type VAB-206, VAB-49 (main circuit current up to 6300 A).



KV-1.65 kV switchgear

One-side access, reduced dimensions, indoor installation, air insulation, complete with withdrawable HSCB type VAB-206, Gerapid or UR (main circuit current up to 4000 A).



RUOSH-600 V switchgear for negative busbars

One-side access, reduced dimensions, indoor installation, air insulation (main circuit current up to 4000 A).

LOW VOLTAGE SWITCHGEARS

Low voltage switchgears are designed for distribution of the electric energy of 3-phase alternating current of industrial frequency up to 1000 V and direct current up to 440 V. Low voltage switchgears are used in all field of energy generation, transmission, distribution in the electrical networks.

The customer can select two version of the following switchgears modifications.



Low voltage switchgears

One-side access, main circuits AC current up to 2500 A, AC voltage up to 0.66 kV, DC current up to 630 A, DC voltage up to 440 V.



Sivacon 8PT low voltage switchgears

One-side and two-side access, rated AC current of the main circuits up to 7400 A, rated AC voltage up to 0.69 kV

RECTIFIERS

The rectifiers are design to convert alternative current to direct current (rectifiers) or to convert direct current to alternative current (inverters) at traction substations and other customers.

Main types of the rectifiers for use on traction substations:

- rectifiers for railways 3.3 kV,
- rectifiers for undergrounds 825 V,
- rectifiers for trams and trolleybuses 600 V,
- thyristor rectifiers for DC voltage booster units,
- inverters.

The customer can select rectifiers with one- or two-side access for maintenance, 6- or 12-pulse scheme.



Rectifier for railways

V-MPP-D-1.6k-3.3k-UHL4

Nominal rectified voltage 3.3 kV, rectified current up to 1.6 kA, fan switch on in case of overheat.



Rectifier functional unit for railways

BL-V-MPP-D-3.15k-3.3k-UHL4

Nominal rectified voltage 3.3 kV, rectified current up to 3.15 kA in case of parallel connection of two rectifiers, fan switch on in case of overheat.



Inverter for railways
I-P-MP-2.0k-3.8-UHL4

Nominal voltage DC up to 3.8 kV, voltage range from 3.7 up to 3.9 kV, nominal current 2.0 kA, fan switch on in case of overheat.



Rectifier for undergrounds
V-MPP-D-2.5k-825-UHL4

Nominal rectified voltage 825 kV, rectified current up to 2.5 kA, fan switch on in case of overheat.



Rectifier for trams and trolleybuses
V-MPE-D-2.0-600-UHL4

Nominal rectified voltage 600 V, rectified current up to 2.0 kA.



Rectifier for trams and trolleybuses
KV-V-MPED-2.0k-600-UHL4

Withdrawable diode unit, nominal rectified voltage 600 V, rectified current up to 2.0 kA, fan switch on in case of 50% current of nominal value.

AUTOMATED TELEMECHANICAL CONTROL SYSTEM

Software and hardware components of automated telemechanical control system are design to ensure supervision and control over spaced apart railway power supply facilities or other industrial facilities.

The hardware components can be used with communication channels voice frequency, digital communication channels of any configuration, the base protocol MODBUS, at the request of the customer can be implemented other protocols.

The software is implemented on the basis of specialized SCADA - ASTMU with control and server monitoring and diagnostics.

CONTROL PANELS FOR TRACTION SUBSTATIONS



Substation control panel

Two-side access, indoor installation, is designed for telemechanical and remote control of the substation, collection information from digital smart protection and control terminals.



Disconnectors control panel

One-side access, indoor installation, is designed for remote control of disconnectors and disconnector drive protection.

TELEMECHANICAL CONTROL PANELS

Telemechanical control panels are designed for existing substations with electromagnetic relays.



Telemechanical KP-M (PS) panel



Telemechanical KP-B (TP) panel

DIGITAL SMART PROTECTION AND CONTROL TERMINALS

All digital smart protection and control terminals InTer are full-functional bay terminals and have the following functions:

- all types of bay protection,
- all bay automation functions,
- bay control (local and remote),
- measurements of the controlled parameters,
- emergency events logging,
- emergency process oscilography,
- bay diagnostics,
- self-diagnostics.

Every terminal InTer has control and protection units. The control unit has the buttons for local control of bay's circuit-breaker and disconnector, the lights for indication, the display for indication of the controlled parameters and sets input.

The connection between shunts 600/825/3300 V is made by fiber optic cables to the protection unit of InTer.



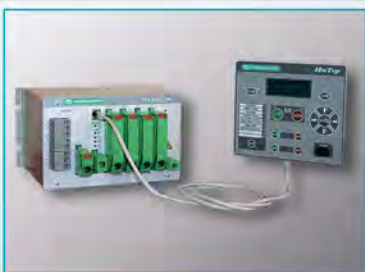
Smart bay controller for 3.3 kV bays of InTer-3.3 series for railways



Smart bay controller for 2x25 and 27.5 kV bays of InTer-2x25 (27.5) series for railways



Smart bay controller for 825 V bays of InTer-825 series for undergrounds



Smart bay controller for three-phase 6, 10, 20 kV bays of InTer series for utilities



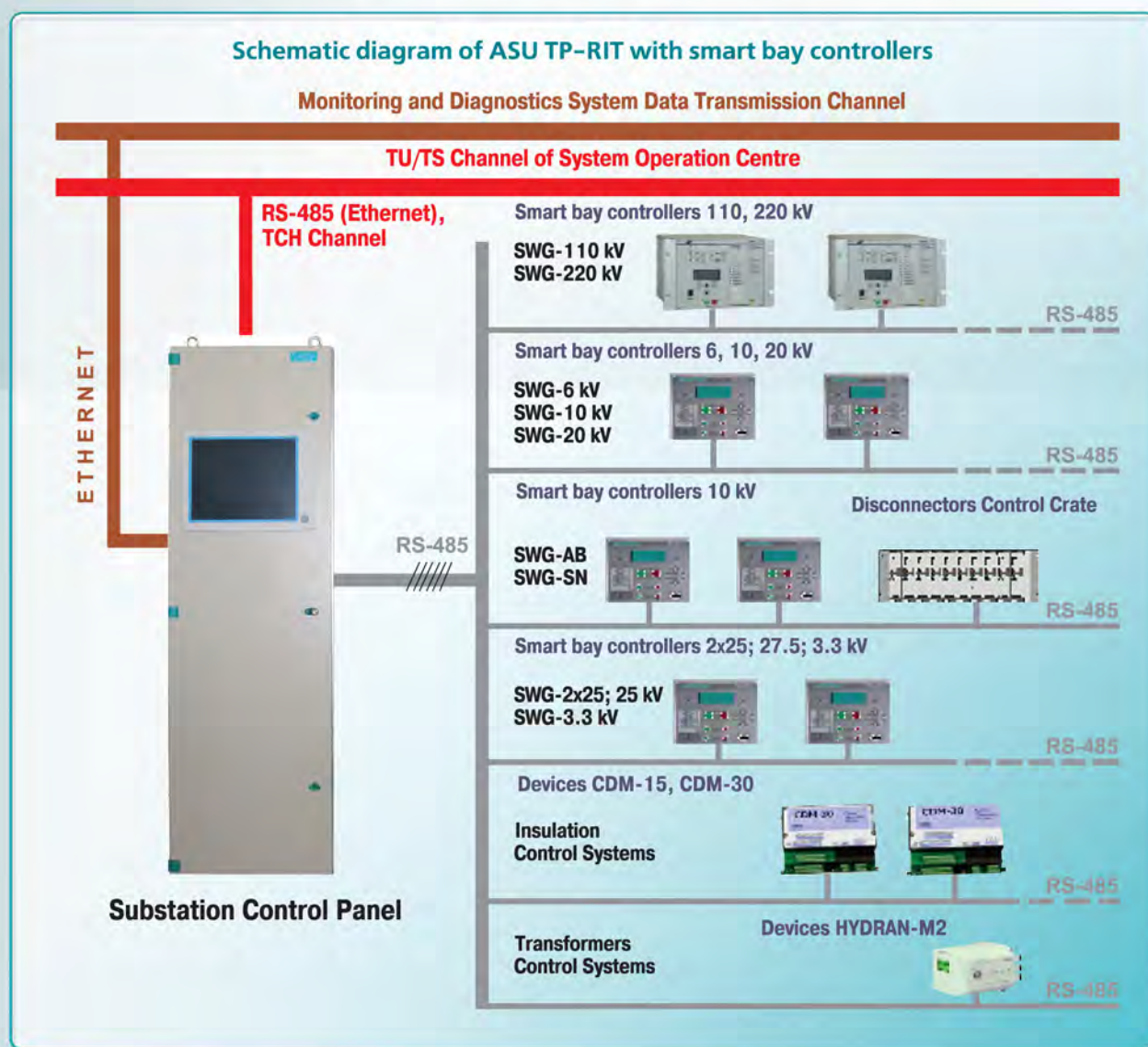
Smart bay controller for 600 V bays of InTer-600 series for trams and trolleybuses

SUBSTATION AUTOMATIC PROCESS CONTROL SYSTEM

Substation automatic process control system ASU TP-RIT has a structure of a two-level distributed system.

The first level – devices for local control.

The second level – common substation control.



ASU TP-RIT provides fulfilment of the following functions:

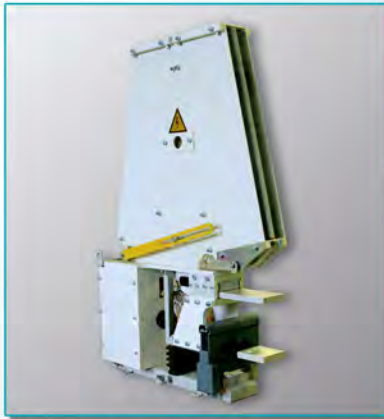
- control,
- protection and automation,
- equipment and self-diagnostics,
- emergency process oscilography,
- parameters measurement,
- data processing and storage.

Communication with the system operation centre is managed via TU/TS channels of any telemechanical EST-62, LISNA, MST-95, ASTMU system as well as via SPD-OTN channels. SPD-OTN channels are also used for transmission of measurements and diagnostics information. Dedicated SPD channels are applied for operation control.

HIGH-SPEED DC CIRCUIT-BREAKERS

The high-speed DC circuit-breakers VAB-206, VAB-209 and VAB-211 series, are designed to prevent overcurrent and short-circuits current in the DC circuits of traction substations and traction power supply linear devices.

The circuit-breakers may also be used to protect the semiconductor converters, electrical machines and DC lines in industrial installations of various purpose.



HS DC circuit-breaker VAB-206 for railways
Nominal current 4000, 5000 A.
Nominal voltage 3300 V.



HS DC circuit-breaker VAB-206 for undergrounds
Nominal current 4000, 5000, 6300 A.
Nominal voltage 1050 V.



HS DC circuit-breaker VAB-209 for trams and trolleybuses
Nominal current 2500 A.
Nominal voltage 1050 V.



HS DC circuit-breaker VAB-211 for trams and trolleybuses
Nominal current 2000 A.
Nominal voltage 660 V.

SPECIAL EQUIPMENT FOR POWER INCREASE OF AC AND DC ELECTRICAL RAILWAYS

The special equipment for power increase of AC electrical railways are design to compensate of catenary voltage drop due consumption reactive power and to compensate voltage drop at inductive resistance of the external (feeding) electrical network.

The special equipment for power increase of DC electrical railways are design to increase catenary voltage due using of DC voltage booster units or power transmission via DC high voltage.



AC 25 kV filtration and reactive power compensation units

(Indoor or outdoor installation) is designed to reactive power compensation and high harmonic filtration. The unit is connected between on of incoming lines and return line. Power of the compensation up to 2.8 MVar.



AC 2x25 and 25 kV compensation unit

Voltage compensation up to 6 kV for substation current up to 2.4 kA. It is included in series with the inputs of the traction transformer on substation or catenary wires 25 kV in order to increase the voltage in the traction network by reducing its complex impedance.



DC voltage booster unit

DC voltage range up to 500 V, nominal current 3.15 kA, AC input voltage 10 or 6 kV, is designed for enforcement of catenary system power supply 3.3 kV DC for electric railways.



GROUPING POINTS



**Modular type grouping point
PG-M-3.3/27.5**



Modular type grouping points PG-M-3.3/27.5 are designed for sequential DC (3.3 kV) and AC (27.5 kV) power supply of the switching sections of the splicing stations catenary system.

Modular grouping points are used for newly developed splicing stations or replacement of open-type grouping points which operating life has expired.

Main components for the modular grouping point:

- module, 4.8 m length;
- switching panels of the grouping point of 3.3 kV DC and 27.5 kV AC splicing stations catenary system 1S-PV-3.3/27.5;
- station protection unit panel 1S-UZSSPP-3.3.



1S-UZSSP-3.3
Semiconductor grouping point module with protection device panel for splicing station.



Grouping point 3.3/27.5 switch panel 1S-PV series
One-side access, indoor installation, nominal DC current 1400 A, AC current 1000 A, bar connection.

Depending on the number of outgoing feeders produced three types of grouping points – 6, 9 and 12 feeders. All equipment item grouping point PG-M-3.3/27.5 is located in the 3, 4 or 5 containers (modules).

SECTIONING POINTS AND PARALLEL CONNECTION POINTS



DC sectioning point PSK-25-1 (North Caucasus Railway)

Sectioning points of catenary DC 3 kV and AC 25 kV are used on the double-track and one-track electric railways for the connection of different sections of catenary sections, as well as for overload current and short circuit protection.

Parallel connection points are used for parallel connection of the catenary of one-track and double-track railways. Parallel connection points ensure the selectivity of the feeder protection.

Main types of the sectioning points:

- for single way railways,
- for two ways railways (possible with bus sectioning or without).



The high-voltage compartment of AC sectioning point PSK-25-2



The high-voltage of DC sectioning point PS-3-2

Depending on type sectioning points and parallel connection points include:

- one module divided into a high voltage and a control by a metal partition;
- two modules – a high voltage module divided into a high voltage compartment and an anteroom by a metal partition, and a control module.

UNDERGROUND ELECTRICAL TRACTION NETWORK EQUIPMENT

The **underground electrical traction network equipment** are designed for distribution of the electric energy direct current 825 V in the underground electrical networks.

Main types of the units:

- switching point PP-825 V,
- cable connection panel SHPK-825 V,
- return line disconnector panel SHROT-825 V,
- siding feeder switching point RPPT-825 V,
- depot feeder switching point PRD-825 V,
- sectioning point PS-825 V,
- depot sectioning point PSD-825 V.



Switching point PP-825 V

Indoor or outdoor installation, up to IP55, up to 5000 A.



Cable connection panel SHPK-825 V

Indoor or outdoor installation, up to IP55, up to 5000 A.



Sectioning point PS-825 V

Outdoor installation, up to IP55, up to 4000 A.



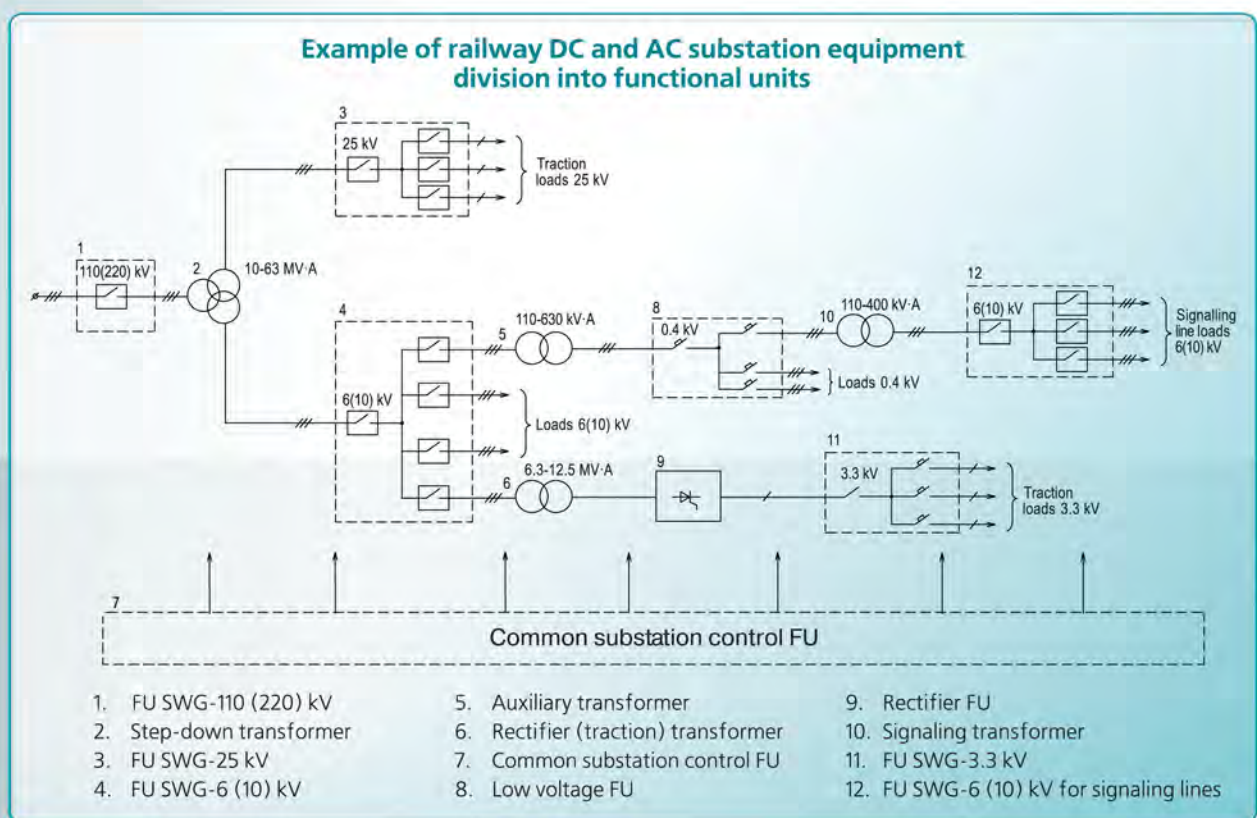
Depot feeder switching point PRD-825 V

Outdoor installation, up to IP55, up to 4000 A.

FUNCTIONAL UNITS, MODULES AND SUBSTATIONS

Implementing of packaged modular equipment supply to ready-to-operate facilities thanks to diversity of products released. Traction substations represent a typical example of such facilities. The equipment comprising such facilities is divided into structurally and functionally complete enlarged modules – functional units. Functional units represent assemblies of panels, separate components, primary transducers, microprocessor-based controllers unified by framework, common power conductors and secondary circuits. Traction substations consist of functional units which are mechanically connected between each other. Ready-to-operate busbars and cables for quick electrical connection ensure ease of assembling. Functional units can be placed in a metal or concrete module, permanent or prefabricated buildings and etc. Such approach provides several **prominent technological advantages**:

- good workmanship and high durability;
- high prefabrication of equipment including telecontrol and energy audit;
- reduction of time required for commissioning (start-up availability – up to 3-4 weeks after final completion);
- option for application of functional units in different configurations depending on project's requirements during reconstruction;
- reduced time and costs of design works;
- easy installation and assembling of equipment;
- one supplier providing guarantee for all subsystems comprising functional units or modules.



Functional unit (FU) baseline for railway DC and AC tractions substations:

- AC switchgears FU 110 (220) kV (FU OSWG-110 (220) kV),
- medium voltage AC switchgears FU 6, 10, 20, 35 kV (FU SWG-6, 10, 20, 35 kV),
- medium voltage AC switchgears FU of automatic block signalling power lines 6 (10) kV (FU SWG-6 (10) kV),
- medium voltage AC switchgears FU 25 kV and 2x25 kV (FU SWG-25 kV) and (FU SWG-2x25 kV),
- substation auxiliaries FU,
- common substation control FU (FU OPU),
- semiconductor rectifier FU (FU PV),
- medium voltage DC switchgears FU 3.3 kV (FU SWG-3.3 kV),
- diesel-generators FU (FU DGA).



Medium voltage DC switchgear 3.3 kV functional unit
One-side access, indoor installation, panels KV-3.3 series or similar. Nominal current up to 6300 A, up to 4 panels per unit.



Low voltage DC switchgear functional unit
One-side access, indoor installation, nominal DC current up to 630 V, nominal DC voltage 220 V.



Medium voltage AC switchgear 2x25 kV functional unit
One-side access, indoor installation, panels 1S-2x25, K-200 series or similar. Nominal current up to 1250 A, up to 3 panels per unit.



Medium voltage AC switchgear 35 kV functional unit
One-side access, indoor installation, panels K-201 series or similar. Nominal current up to 2500 A, up to 6 panels per unit.

The module – is one functional unit in the temperature-controlled container for outdoor installation with heating, lighting, ventilation, fire alarm or fire suppression system. Generally, the modules are made of a metal container length 3.6, 4.8 or 6 m. Overall dimensions of the module allow its transportation by rail on the platform.

Main types of the modules for DC and AC railway traction substations:

- medium voltage AC switchgear 6 (10), 20 and 35 kV modules,
- medium voltage AC switchgear 6 (10) kV modules for signaling lines,
- medium voltage AC switchgear 2x25 and 25 kV modules,
- low voltage AC and DC switchgear modules,
- substation control modules,
- rectifier modules,
- medium voltage DC switchgear 3.3 kV modules,
- diesel-generator modules,
- special modules for railway traction substations (warehouse, workshop etc).



Medium voltage AC switchgear 35 kV module

Outdoor installation, with container (module) length 6 and 4.8 m, up to 6 panels per module, cable connections to the panels.



Medium voltage AC switchgear 6 (10) kV module

Outdoor installation, with container (module) length 6 and 4.8 m. For container 6 m up to 7 panels Omega series per module, for container 4.8 m up to 5 panels, cable or bars connections to panels. For container 6 m up to 8 panels K-199 series, for container 4.8 m up to 6 panels, cable connections to the panels.



Medium voltage AC switchgear 27.5 kV module

Outdoor installation, with container (module) length 6 and 4.8 m, for container 6 m up to 3 panels per module, for container 4.8 m up to 2 panels per module, cable or bars connections to the panels.



Diesel-generator module

Outdoor installation, with container (module) length 6 m. Diesel-generator power 100 kWt (125 kV·A). Nominal generator voltage 380/220 V or 220/127 V. With insulated or earthed neutral. Work time up to 24 hours without additional tanking. The fuel tank 800 l. Fuel consumption at 100% load of 29.4 l/h.

It is possible to build the following substations using functional units and modules:

- AC traction substation 25 or 2x25 kV,
- DC traction substation 3.3 kV,
- AC-DC traction substation for splicing stations,
- AC transformer substation.



AC traction substation 2x25 kV

Nominal AC input voltage 110 or 220 kV.
Nominal AC voltage primary wiring traction power transformer 110 or 220 kV.
Nominal AC voltage outgoing traction feeders 2x25 kV.



DC traction substation 3.3 kV

Nominal AC input voltage 6, 10, 35, 110 or 220 kV.
Nominal AC voltage 50 Hz primary wiring rectifier power transformer 6, 10 or 35 kV.
Nominal DC voltage outgoing traction feeders 3.3 kV.

TURNKEY CONSTRUCTION OF ELECTRICITY SUPPLY FACILITIES

NIIEFA-ENERGO, LLC is a modern enterprise, the powerful potential of which are: hi-tech equipment, qualified personnel, advanced methods of production management, all of this allows for a comprehensive supply of "turnkey" electrical equipment (including Automated Process Control and Relay Protection and Automation Systems) for the power supply of industrial enterprises, electrified transport, oil and gas, energy systems, urban planning and other objects

As a rule, the substation is constructed of functional units, easily mechanically joined together with a set of fabricated busbars and cables for quick connection. Function units can be placed in any shell: a metal or concrete container (module) in capital or pre-fabricated buildings.

We performs the entire range of work:

- research,
- engineering,
- design,
- manufacturing,
- equipment delivery to the Customer,
- full range of assembly and start-up and adjustment works,
- service support.



Delivery of "turnkey" allow customers in the construction of electric power facilities have a supplier who is responsible for the entire range of activities to its commissioning and warranty and does not deal with issues splicing equipment from different manufacturers.



DESIGN OF ELECTRICITY SUPPLY FACILITIES WITH VOLTAGE UP TO 220 kV

NIEFA-ENERGO, LLC has a competency certificate for certain types of works that affect the safety of capital construction projects, including a unique, extrahazardous and technically complex capital construction projects (excluding projects of nuclear energy use).

Types of works performed:

- main circuit design,
- architectural and building aspects,
- electric equipment and electric mains location plan,
- installation of electric equipment,
- power grounding and lightning protection,
- relay protection and automation (including coincidence circuits and feature determination tables for shutdown terminals),
- automated Process Control Systems,
- heating and ventilation,
- lighting,
- fire alarm systems,
- other electrical engineering work (ventilation and fire-fighting automatic systems, etc.),
- optional equipment assignments for plants.

In working as general designer, NIEFA-ENERGO uses external subcontracting for the following work:

- engineering survey,
- design of overhead and cable lines,
- water supply and drainage,
- master plan and transport,
- other special sections (environmental protection, electromagnetic compatibility, etc.).



Project department

INSTALLATION, COMMISSIONING AND MAINTENANCE

NIIEFA-ENERGO, LLC performs the full range of installation work for electric equipment manufactured both by the company and by other producers. The enterprise is a member of non-commercial partnership of the Interregional Association of Railway Construction Organizations self-regulatory organization; it has a competency certificate for certain types of work that affect safety of capital construction projects.

NIIEFA-ENERGO has everything necessary for high-quality performance of electric machinery installation work-tools, technological and installation equipment, equipment for electrical measurement and testing, and devices for relay protection and automation circuit adjustment.

Types of installation work performed:

- assembly and disassembly of transformer stations and line electric machinery with voltage of up to 35 kV,
- assembly and disassembly of transformer stations and line electric machinery with voltage exceeding 35 kV,
- assembly and disassembly of infrastructure facilities of railway, underground and urban electrical transport.



Installation works the "Gornaya" AC traction substation (auto- and railroad Adler – resort "Alpika-Servis")

Types of start-up and adjustment work performed:

- start-up and adjustment of supply and measurement transformers,
- start-up and adjustment of switching units,
- start-up and adjustment of relays,
- start-up and adjustment of automation and electricity supply,
- start-up and adjustment of voltage system and control current,
- start-up and adjustment of off-line debugging of systems,
- start-up and adjustment of remote control devices.



Installation works at the "Osinovaya Roscha-2" 110/10/10 kV substation (Saint-Petersburg)

TESTING PROCEDURES FOR PRODUCTION COMPLIANCE APPROVAL

The equipment manufactured by NII-EFA-ENERGO pass tests in the independent laboratory TEST-ENERGO located at manufacturing factory's premises.

The testing laboratory competence according to requirements of GOST ISO/IEC 17025-2009 is approved by accreditation certificate No. RA.RU.21TЭ01 issued 15.05.2015 by the Federal Service for Accreditation.

The laboratory qualified personnel has at its disposal modern testing facilities, equipment and measurement tools.

The testing laboratory is certified to conduct testing in accordance with the Scope of accreditation to approve compliance with Technical Regulation of Customs Union TR 002/2011, TRCU 003/2011 and TRCU 004/2011, as well as with requirements of GOST R system.



Testing laboratory

Test categories:

- certification,
- qualification,
- regular,
- standard,
- survey,
- acceptance,
- acceptance of delivery.

Test objects:

- transformer and reactor equipment,
- low voltage electric machinery (up to 1 kV),
- medium voltage electric machinery (up to 35 kV).

Test types:

- insulation strength test by DC rectified voltage up to 400 kV,
- insulation strength test by increased voltage of industrial frequency up to 200 kV,
- insulation strength test by lightning impulse up to 460 kV,
- temperature-rise test by rated current during long working cycles,
- mechanical tests,
- safety tests and etc..

TRAINING THE CUSTOMER'S STAFF

NIIIEFA-ENERGO, LLC has a licence to carry out educational activities. The training is provided in the educational centre at manufacturing factory's premises according to component production list. Extension courses certificates are issued for Customer's staff.

The training conducted by the specialists of NIIIEFA-ENERGO, LLC includes teaching production operation and maintenance skills. The training may be performed with day release at manufacturing factory's premises or at Customer's premises during installation and start-up works.



The training includes:

- academic education,
- study of checklist and operation manuals,
- maintenance and repair skills training.

The timeframe and programme of the training are approving by the Customer.

If a contract for product delivery has been concluded with the Customer, the training is provided free of charge.



Extension courses (NIIIEFA-ENERGO exhibition hall)



Chief Engineer Day of Oktyabrsky Directorate of Infrastructure (NIIIEFA-ENERGO test specimen area)

Effective enterprise activity is largely due to personnel management, the basic principles of which are creation and development of corporate traditions, optimal combination of moral and material forms of motivation.

NIEFA-ENERGO, LLC pays great attention to education and technical training of young specialists: equips training student laboratory, specialists of the enterprise lecture at universities, direct course and diploma projecting.



Simulation traction substation in Saint-Petersburg State Transport University



Practical training at the simulation traction substation in Saint-Petersburg State Transport University



Training of NIEFA-ENERGO personnel
Lecturer: Dr. V.E. Marskiy, senior scientist of JSC "VNIIZhT"



Laboratory of automatic control system for testing hardware and software solutions and training staff (NIEFA-ENERGO)

EXHIBITIONS AND CONFERENCES

NIIEFA-ENERGO, LLC takes part in international exhibitions: "EXPO 1520", "ExpoCityTrans", "ElectroTrans" (Moscow), "InnoTrans" (Germany), "Innoprom" (Ekaterinburg). The company was awarded with diplomas and medals for the development of new products, as well as for huge contribution to the electrical industry. The company takes active part in conferences and symposiums: "Eltrans", "State-of-the-art automation systems and tools", "Electrical network of Russian", "Energetika&elektrotehnika" etc. We publish research and technical articles and information and ad materials in different specialized publications (e.g. "Global railways", "Metro-invest", "Russian Railways partner", "Science and transport", "Eurasia News" magazines etc), in conference and symposium papers.

Our company also holds industry network seminars and scientific and technical conferences.



NIIEFA-ENERGO at the fair "EXPO-1520"
(Shcherbinka, Moscow)



President of JSC "Russian Railways" Belozerov O.V. visited the stand NIIEFA-ENERGO (Moscow, Shcherbinka, "EXPO 1520")



Joint Scientific Conference "New technologies and equipment of traction power supply urban electric transport. Trends in the development of light rail transport in Russia and the CIS" (NIIEFA-ENERGO, Saint-Petersburg)



Chairman of the Federation Council of Federal Assembly of Russia Matvienko V.I. and Governor of St. Petersburg Poltavchenko G.S. visited the stand NIIEFA-ENERGO (Center for import substitution and localization of Saint-Petersburg)

Our company, using a complex approach to knowledge-intensive tasks in order to fully satisfy Customer's requirements, made and, therefore implement fundamentally new projects to address the needs of different customers: i.e. railway and municipal electrified transport, metro service, Russian energy complex, industrial plants and municipal facilities.

Nowadays, **NIIEFA-ENERGO, LLC** is on the verge of further development milestone. The company invests huge funds into the development of new types of equipment as well as the production base development. The accumulated experience of the electrical equipment development, growing personnel and scientific potential make it possible for our company to develop new products and offer to Customer the latest design and technical solutions.



Electrical room of the "Leypysuo" DC traction substation 3.3 kV of the October Railway



"Veymarn" DC traction substation 3.3 kV of the October Railway



110/27.5/10/3.3 kV substation of Engels locomotive plant



BKTPB modular package transformer substation in concrete shell at the Luzhskaya – Sortirivochnaya station



Traction network equipment 825 V of the Dostoevskaya – Mar'ina Roshcha section of the Moscow underground



"Mezhdunarodnaya" DC traction underground substation 825 V (Saint-Petersburg)



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