



ERSO - electrical engineering holding



ERSO is an innovative holding company with a century-old history

We are creating a
successful future of energy

Our values

Q.TEC
Quality Technology

Quality

Trust

ESG

Collaboration



1928

"Elektrozavod" has been launched in Moscow in order to implement the state electrification plan of the Soviet Union



2009

The Ufa Transformer Plant was put into operation. The launch of production was carried out by V.V. Putin

December 2020

JSC "Elektrozavod" became a part of AFK "Sistema". The leading international manufacturer of electrical equipment of a wide profile ERSO has been created

2021

New divisions have been created and top management has been updated. Strategic agreements have been concluded with leading Russian and international electrical engineering companies.

2022

The production of the holding's products has increased fourfold. An advanced design bureau, "ERSO Transformer Solutions," has been established, bringing together the industry's finest specialists.

2023

The production of the holding's products increased by 1.5 times compared to 2022.

Moscow

JSC "PC HC "ELEKTROZAVOD"

Production of large transformers and reactors up to 1150 kV; 13,000 MVA/year

LLC "ERSO Engineering"

Engineering center, design and provision of EPCM services

Ufa

Ufa Transformer Plant

Production of medium and large transformers up to 330 kV; 12,000 MVA/year

JSC "Ufa Plant Electroapparat"

Production of secondary electrical equipment

LLC "ERSO Transformer Solutions"

Engineering bureau specializing in the design of transformers and shunt reactors.



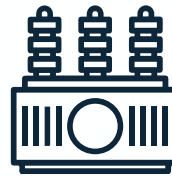
ERSO today are several production sites, own design and research institutes, design bureau, service and test centers



QUALIFIED
TEAM

> **1,4 K**
people

With design and manufacturing
experience



WIDE PRODUCT RANGE

> **1,5 K**
types

Of transformer and reactor equipment,
for voltages from 0.5 kV to 1150 kV, up to
630 MVA



HIGH PRODUCTION
CAPACITY

> **25 K**
MBA/year

Total design capacity for transformer
equipment production

MAIN CONSUMERS OF THE GROUP'S PRODUCTS



Energy and
Industrial
enterprises



Resource mining
enterprises

Competitive advantages of ERSO Holding



The main activities of the Holding

Transformers and reactors



Design, development and production of transformers and reactors with capacity up to 630 MVA and voltage range from 0.5 kV to 1150 kV

Integrated engineering and service



Turnkey construction of energy facilities: FEED, CIW, equipment supply, commissioning works, repair, warranty and post-warranty maintenance of energy facilities, equipment maintenance

Energy systems equipment

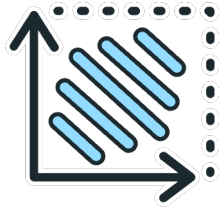


Switchgear, mobile and modular substations, switchgear and controlgear assemblies (KRUs), Integrated Distribution Device of Electrozaod (KRUE), protective relay and automation devices, intelligent metering systems, communication systems, automation, and energy system modeling.

Testing center of JSC "PK HC ELEKTROZAVOD" (Moscow)



Equipment required for testing,
including a **167 MVar** high-voltage
capacitor bank for testing shunt
reactors



**Area of the test
center**

3 000 m²



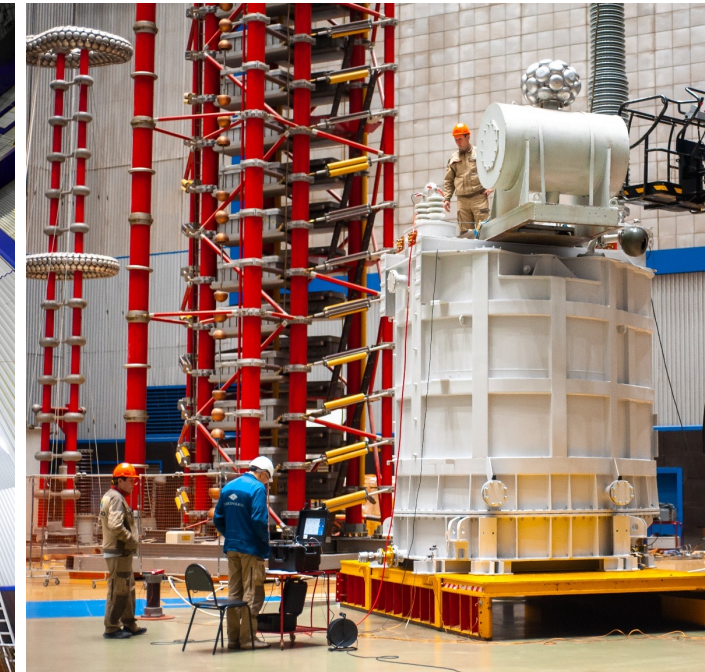
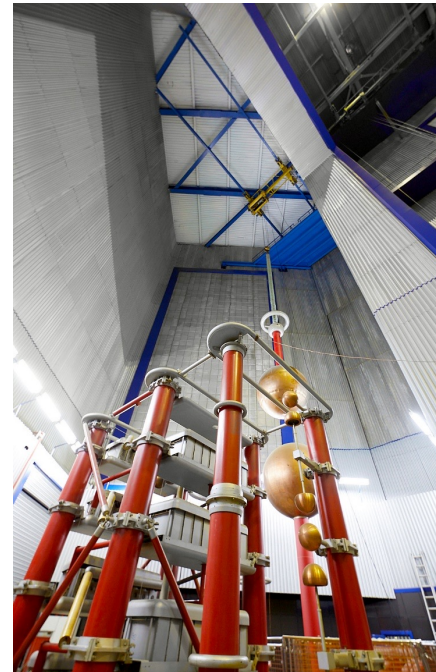
Qualified specialists with
big experience in the
electrical industry

All types of acceptance and type tests of the following products:

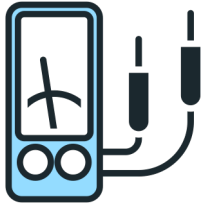
- power transformers from 35 kV to 750 kV, with a capacity of up to 630 MVA;
- 220-750 kV shunt reactors, including controlled ones, in single-phase and three-phase versions;
- autotransformers of voltage classes 220, 330, 500, 750 kV;
- voltage transformers up to 750 kV;
- current transformers up to 750 kV, including embedded current transformers;
- 6-220 kV electrical furnace transformers;
- 0.1-35 kV distribution transformers.



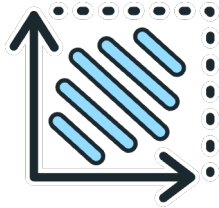
Accredited by the FEDERAL ACCREDITATION SERVICE (**certificate
RA.RU.22MB12**)



Testing center of JSC "HOLDING ERSO" (Ufa)



The equipment required for testing is manufactured by Haefely Test AG, including a pulse voltage generator designed **up to two million volts**



Area of the test center

1 409 m²



Qualified specialists with big experience in the electrical industry

All types of acceptance and type tests of the following products:

- auto-transformers with voltages up to 330 kV and power up to 250 MVA;
- power transformers with voltages up to 330 kV and power up to 250 MVA;
- electric arc furnace transformers with voltages up to 35 kV and power up to 15 MVA.



Accredited by the FEDERAL ACCREDITATION SERVICE (**certificate RA.RU.22MB31**), Rostekhnadzor certificate No. 103-2022.



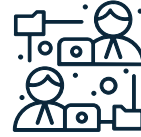
Design and Technology Bureau

ERSO has assembled a new world-class design bureau. The enterprise is ready to provide a personalized approach for each customer. Design Bureau brings together experienced specialists in the design of a wide range of electrical products.



Number of designers and technologists

91 people



Unified technological space

PLM Teamcenter



Membership in international associations



Design licenses for nuclear power plants

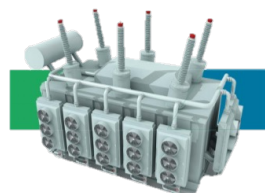


Transformers and reactors product offer, customers and key projects



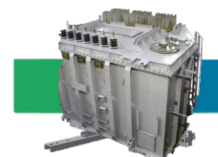
500-750 kV transformers, shunting
and controlled reactors

- Optimal time-tested design
- Competitive price



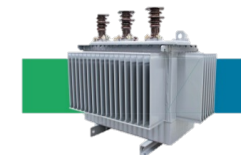
110-220 kV
autotransformers, transformers

- Best technical solutions
- Optimal financial conditions
for Customers
- Delivery experience
- Competitive price



Ships and floating constructions,
furnace, special
transformers

- Delivery experience
- Design developments
- Innovations



6, 10, 20, 35 kV
transformers

- Modern and efficient design
- High quality
- Certification
- Warehouse program and
dealer network

Key customers



Key projects



Substation "Narva"



Norilsk Nickel



Substation
"Ugolnaya"

Integrated engineering product offer, customers and key projects

Design and survey
works

Equipment supply

Construction and
installation works

Commissioning works

Commissioning of the
facility



- **FEED – own forces of LLC "ERSO Engineering" (subsidiaries and associates of JSC "HOLDING ERSO")**
- **CIW and commissioning – own forces of LLC "ERSO Engineering" (subsidiaries and associates of JSC "HOLDING ERSO")** with the involvement of regional subcontractors for general construction works;
- **Own production of the main equipment;**
- Flexible financial services;
- Provision of an **extended warranty period** for the constructed object;
- Extension/renewal of the equipment warranty.



A full range of services is offered when implementing projects for the construction of turnkey energy facilities:

- selection of a construction site based on the analysis of the prospects for electricity and heat supply to consumers;
- calculations of investment justification and feasibility reports, development and approval of the project financing scheme;
- execution of design and estimate documentation, obtaining the necessary approvals and permits for the construction of facilities;
- construction works, complex supply of equipment and materials, installation and commissioning;
- putting the equipment into commercial operation and delivery to supervisory and regulatory authorities;
- training of operational personnel and further maintenance of equipment.

Key customers



Key projects

Completed projects

Cheryomushki Substation 110 kV (Republic of Adygea) PJSC Rosseti Kuban: supply of power and switching equipment, construction, installation and commissioning with replacement and installation of a transformer;
Electrical supply of production sites of Vyatka Plywood Mill LLC;
Improving the reliability of power supply to the plants of JSC "Segezha Pulp and Paper Mill" and JSC "Sokolsky Pulp and Paper Mill";

Projects in the implementation phase:

110 kV Substation "Ikea" - under construction (supply of switchgear and controlgear assemblies (KRUs), communication systems, power transformers, and distribution switchgear and Integrated Distribution Device of Electroavod (KRUE)
110 kV Substation "Plato" - two-stage construction of the substation and cable line
110 kV Substation "Predgornaya" - site investigations, design, and construction work (full "turnkey" package)

Services product offer, customers and key projects



Transformer maintenance

- Own service centers
- Major overhauls in factory conditions
- Intermediate (field) repairs
- Implementation of monitoring systems for predictive analytics
- Own production, including spare parts



GIS maintenance

- Installation and repair experience of GIS, switches of the world's major manufacturers
- Own service center equipped with all necessary equipment
- 24/7 support



Maintenance of secondary equipment

- Service from the manufacturer
- Many years of experience in the development, installation and commissioning of equipment
- Direct deliveries of spare parts from world manufacturers
- 24/7 support



Comprehensive solutions for reconstruction

- Optimal price offer
- Commissioning
- Manufacturer's warranty
- Risk reduction
- Reducing deadlines
- Comprehensive approach to the client



Installation supervision and warranty service

- Own service centers
- 24/7 support
- Expertise
- Customer's personnel training, including immersive training
- Extension and renewal of the equipment warranty period



Long-term comprehensive service contracts

- Best solution for the Customer
- Predictable and clear service
- Reducing operating costs
- Reducing downtime of equipment
- Increasing reliability

Key customers



Key projects

- **JSC Polyus Krasnoyarsk:** repair of TRDN 25000/110 at the ERSO site;
- **JSC Polyus Krasnoyarsk:** repair of 2 transformers at the Customer's facility;
- **PJSC FGC UES:** diagnostics of the ROMBS-60000/500 reactor;
- **LLC "IZ-KARTEX":** overhaul of the furnace transformer;
- **Trubino Substation:** supply of spare parts for a 500 kV transformer;

Switchgear equipment and comprehensive solutions

Product offering, clients, and key projects



Gas-insulated switches

- The aluminum alloy casing features lightweight construction, corrosion resistance, and low losses
- Reliable switching of the electrical network, compact size of the distribution device
- Low construction and operational costs
- Built-in measuring transformers



Mobile modular substations for 35, 110, and 220 kV.

- Shortest possible substation commissioning time.
- Minimal substation footprint.
- Capability to relocate the substation to new construction sites
- No need for construction permits
- Possibility of manufacturing in a protected design



KRUE for voltages ranging from 110 kV to 500 kV

- Reliable and secure construction
- Minimal footprint of KRUE.
- High reliability and safety of switching in critical facilities
- Components sourced from top vendors and in-house assembly manufacturing



Packaged Distribution Units 6-35 kV

- Standard cost-effective solution for distributing electrical power to consumers
- Reliable and secure design
- Capability for online monitoring using intelligent devices

Key clients



Key projects

110 kV Substation "Cheremushki" - PJSC "ROSSETI-YUG"

110 kV Substation "Ikea" - PJSC "ROSSETI-YUG"

Ust-Srednekanskaya HPP - PJSC "RusHydro"

Volzhskaya HPP - PJSC "RusHydro"

330 kV Substation "Sadovaya" - MES North-West PJSC "Federal Grid Company of Unified Energy System" (FGC UES)

Orsk Non-Metallic Materials Plant - PJSC "PIK"

Distribution substations - PJSC "ROSSETI-YUG"

Distribution network reconstruction - JSC "BESK"

Baikal Mining and Processing Plant - LLC "Kazminerals"

Olympiadninsky Mining and Processing Plant - PJSC "Polyus"

Energy system mode management solutions

Product offerings, clients, and key projects



Energy system modeling

- Calculation of power system stability and equipment operating conditions
- Power generation dispatch diagrams
- External power supply diagrams for consumers
- Technological audit



Control systems and Relay Protection and Automation

- Data collection and 6 to 500 kV connections' management controller
- Protection against short circuits and faults in connections from 6 to 500 kV
- Transformer monitoring systems
- Adaptive control and dispatching systems



Communication and metering systems

- Data collection and transmission device for switchgear 6-35 kV
- Automated systems for commercial and technical electricity metering and power measurement
- Communication devices and controllers for connections from 35 to 500 kV
- Systems and equipment for Automated Information Systems of Power Supply and Consumption (AISPS)



Excitation control for generators and motors

- Generator excitation control regulator
- Synchronous motor excitation control regulator
- Generator excitation systems up to 160 MW
- Excitation systems for synchronous motors up to 24 MW

Key clients



Key projects

Volkovskaya Solar Power Plant - LLC "Avelar Solar"
Taishet Anode Factory - PJSC "UC RUSAL"
Olympiadninsky Mining and Processing Plant - PJSC "Polyus"
Lomonosovsky Mining and Processing Plant - PJSC "ALROSA"
Three-phase meters - PJSC "ROSSETI - Lenenergo"

Automated Information Systems of Power Supply and Consumption (AISPS) - PJSC "ROSSETI-YUC"
Information collection systems for Ust-Ilimskaya HPP - UC RUSAL
Multiplexers for 500 kV Substation Ust-Kut - PJSC "Polyus"
Information Collection and Transmission System (ICATS) for Sayano-Shushenskaya HPP - PJSC "RusHydro"
Communication systems for Sadilovo Compressor Station - PJSC "Gazprom"



ERSO

ENERGY SOLUTIONS

SALES DEPARTMENT

+7 (495) 777-82-26
sales@erso.group



www.erso.group

123610, Moscow:
Krasnopresnenskaya naberezhnaya, 12
Entrance 7, Floor 17

450520, Ufa, Zubovo Village:
Electrozavodskaya Street, 6