RU DRIVE

INTEGRATED INDUSTRIAL SOLUTIONS

designing | manufacturing | project implementation | engineering support

RU-ENGINEERING RESEARCH AND PRODUCTION ENTERPRISE, LLC

RU-Engineering Research and Production Enterprise is engaged in the design and manufacture of energy saving equipment under its own brand: **RU-DRIVE.**

RU-Engineering is an engineering company of the KER-Holding Group, providing a full cycle of management services for engineering, supplies, and construction in various industries as an EPC(M) contractor.

17 years of successful operation in the market of engineering services

6000 square meters of production floorspace

500 successfully implemented projects

160 highly qualified specialists

ADVANTAGES OF COOPERATION WITH US

INTEGRATED APPROACH

from survey and energy audit to launching and aftersales service

FLEXIBLE FINANCING SYSTEM

We can work in any convenient way: leasing, factoring, energy services

PROJECT IMPLEMENTATION ON A TURNKEY BASIS – FROM 100 DAYS

Local manufacture of energy saving equipment in Naberezhnye Chelny

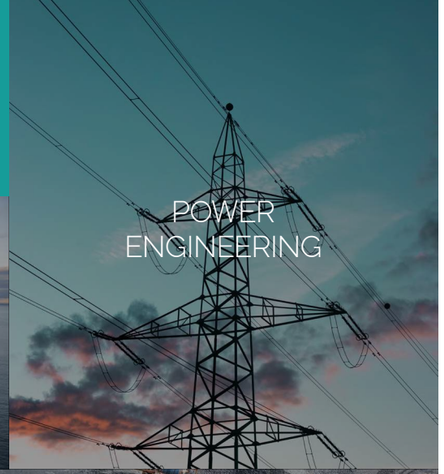
RELIABILITY

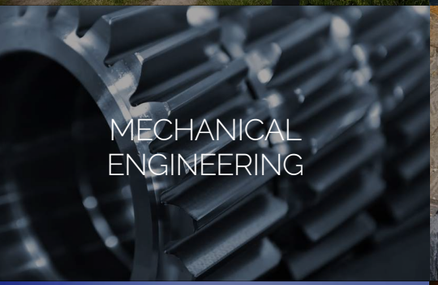
Cooperation with leading manufacturers, independence from any individual supplier or specific technology

ENGINEERING SUPPORT

Aftersales warranty and maintenance services through the entire equipment life cycle

AREAS OF SPECIALIZATION





CUSTOMERS

GAZPROM · ROSNEFT · Russian Railways · LUKOIL OIL COMPANY

t+ group · Severstal · TATNEFT · OGK-2

fortum · QUADRA POWER GENERATION · INTER RAOUES · RUSSIAN COPPER COMPANY

RusHydro · TTK-16 · TATENERGO · KAMAZ

YRMK UMMC · Metalloinvest · SIBUR · ERG

NLMK · nordgold · GAZ

GEOGRAPHY OF OUR PROJECTS

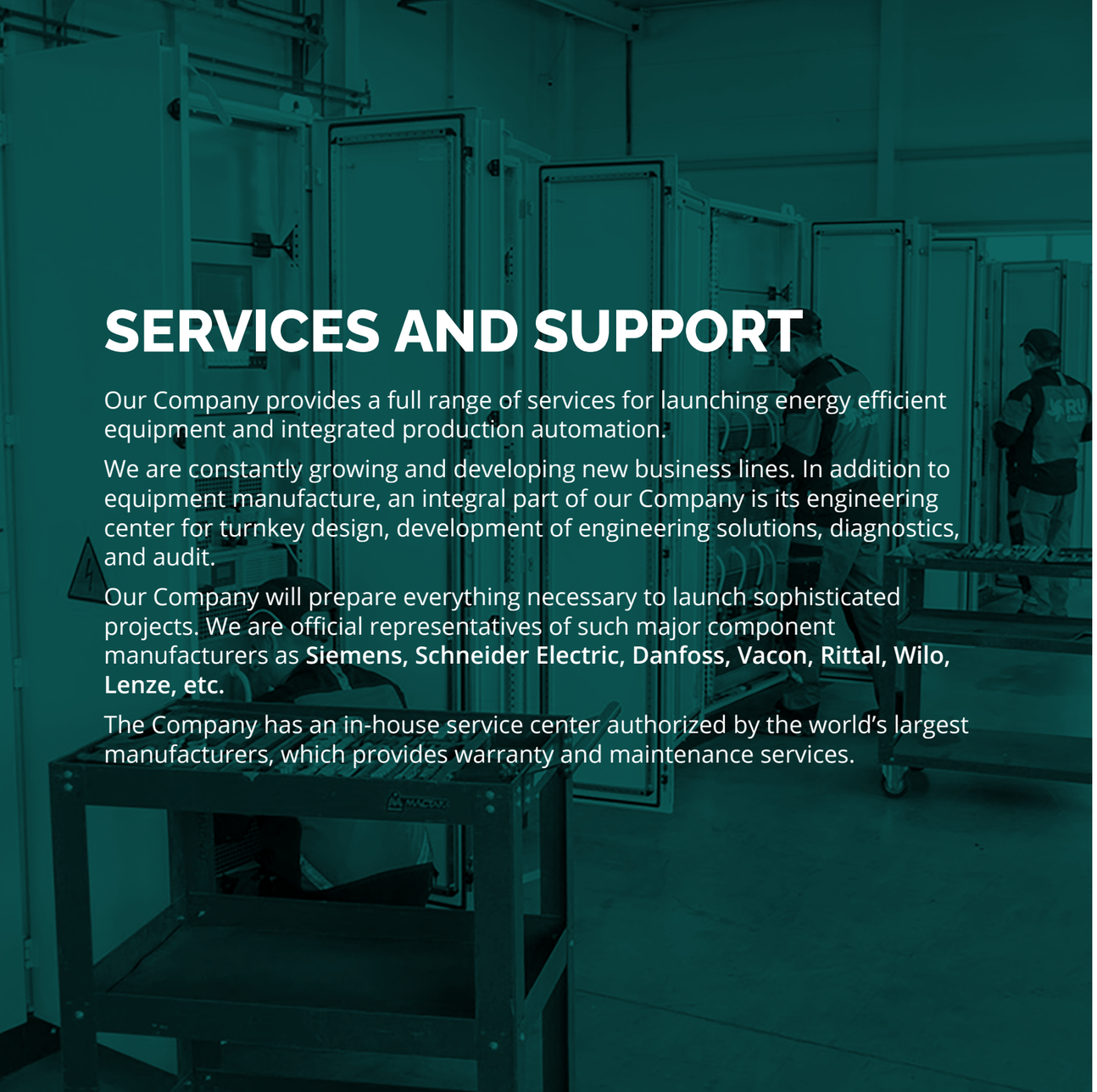
REPUBLIC OF TATARSTAN, RUSSIA

RU-ENGINEERING Research and Production Enterprise, LLC is headquartered in Naberezhnye Chelny

500

projects implemented in various industries

KARELIA
YAMALO-NENETS AUTONOMOUS DISTRICT
RUSSIA
MOSKOW
TATARSTAN
ULAN-UDE
SOVETSKAYA GAVAN
KAZAKHSTAN
CRIMEA
ALMATY
UZBEKISTAN
TASHKENT
AZERBAIJAN
TURKMENISTAN
ASHKHABAD



SERVICES AND SUPPORT

Our Company provides a full range of services for launching energy efficient equipment and integrated production automation.

We are constantly growing and developing new business lines. In addition to equipment manufacture, an integral part of our Company is its engineering center for turnkey design, development of engineering solutions, diagnostics, and audit.

Our Company will prepare everything necessary to launch sophisticated projects. We are official representatives of such major component manufacturers as **Siemens, Schneider Electric, Danfoss, Vacon, Rittal, Wilo, Lenze, etc.**

The Company has an in-house service center authorized by the world's largest manufacturers, which provides warranty and maintenance services.

BUSINESS LINES

INTEGRATED DESIGN

Developing projects and schemes for heat and power supply to industrial facilities and human settlements

INTEGRATED AUTOMATION

a full range of engineering services for the development and deployment of automated process control systems (DCS)

UPGRADING METAL CUTTING EQUIPMENT

Including with programmed numerical control (PNC) systems, aimed at increasing equipment production capacity and reducing the costs without the need to purchase a new machine

MAINTENANCE OF MACHINES WITH PNC

Maintenance of PNC machines is carried out in order to keep their high accuracy and to ensure their trouble-free operation

EQUIPMENT DIAGNOSTICS

A timely diagnostic inspection of equipment reduces the repair and maintenance costs, as well as indirect related costs

AFTERSALES SERVICE

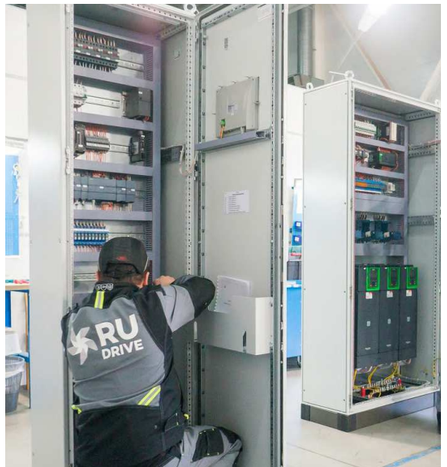
Repair and maintenance of energy saving, metalworking, and testing bench equipment

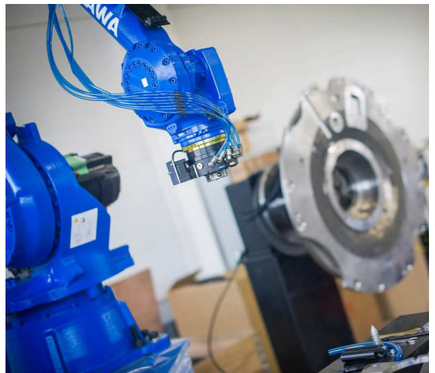
10 IMAGE GALLERY










SOFT STARTER
RU-DRIVE SMV

Sophisticated and highly reliable device for soft starting and stopping of three-phase asynchronous and synchronous motors

The device starts the motor by supplying a slowly rising voltage, thus providing its soft start and smooth acceleration using the minimum current to start the motor.

The second generation of digital microprocessor technology provides you with unique opportunities for controlling a mechanism, reliable protection of an electric motor, and obtaining information via digital channels.

Power:	100 kW - 50 MW
Voltage:	3 kV - 13.8 kV, 3 phases, AC

- Extends the service life of mechanisms and equipment
- Reduces the load on the enterprise's supply substation
- Provides a smooth start for the motor
- Reduces the cost of equipment repairs and replacement

VARIABLE FREQUENCY DRIVE
RU-DRIVE VFD

Controls the speed of three-phase asynchronous and synchronous motors

The electric motor speed is regulated in an automatic mode, by creating a voltage of a given frequency and amplitude at the inverter output.

Power:	200 kW - 28 MW
Voltage:	3 kV - 13.8 kV, 3 phase, AC

- Extends the service life of mechanisms and equipment
- Reduces the energy consumption
- Eliminates voltage dips and reduces inrush currents
- Reduces the cost of equipment repairs and replacement

LOW-VOLTAGE COMPENSATORS AND FILTERS

RU-DRIVE LV SVG

This line of devices is designed for use in enterprise's electric grids to improve the electric power quality parameters

It improves the electric power quality parameters in points that are maximally close both to interference sources in the enterprise's grid and to electric powers consumers that are sensitive to the electric power quality.

Rated power in the compensation mode:	50 to 400 kVA
Rated current in an active harmonic filter mode:	50 to 600 A

- Active filtration of current and voltage harmonic distortions
- Reduces the cost of equipment repairs and replacement
- Reduces active power losses in electric grids
- Improves the energy quality and maintains cosφ close to one

STATIC VAR GENERATOR
RU-DRIVE SVG

Designed to ensure and maintain high mains parameters, to stabilize voltage, and to reduces losses in electric grids

The device detects a volt-ampere reactive input in the system and supplies an equal or reversed in sigh reactive power, thus providing a dynamic compensation.

Power:	0,5 - 40 MVar
Voltage:	3 - 35 kV

- Active filtration of current and voltage harmonic distortions
- Reduces the cost of equipment repairs and replacement
- Reduces active power losses in electric grids
- Improves the energy quality and maintains cosφ close to one

GROUND FAULT NEUTRALISER GFN SYSTEM

The most responsive, fast, and selective protection against single phase-to-ground faults in medium and high-voltage grids

Single phase-to-ground faults are the main cause of emergencies in power grids. They start from an insulation breakdown. The system actively compensates the current in the area of a single phase-to-ground fault using modern technology, power electronics, and patented mathematics. Therefore, there is no need to isolate the damaged connection, which ensures an uninterrupted power supply of all consumers fed from the damaged line.

Ground current:	0 A (< 50 mA)
Protection speed:	< 60 ms

- High speed; the system fully compensates for the ground current < 60 ms.
- Allows to significantly increase the overall reliability of a power supply system
- Minimizes the risk of fire in premises with electric grids
- A built-in relay protection and a system for monitoring the condition of lines

DYNAMIC ONLINE POWER SYSTEM
RU-DRIVE DOPS

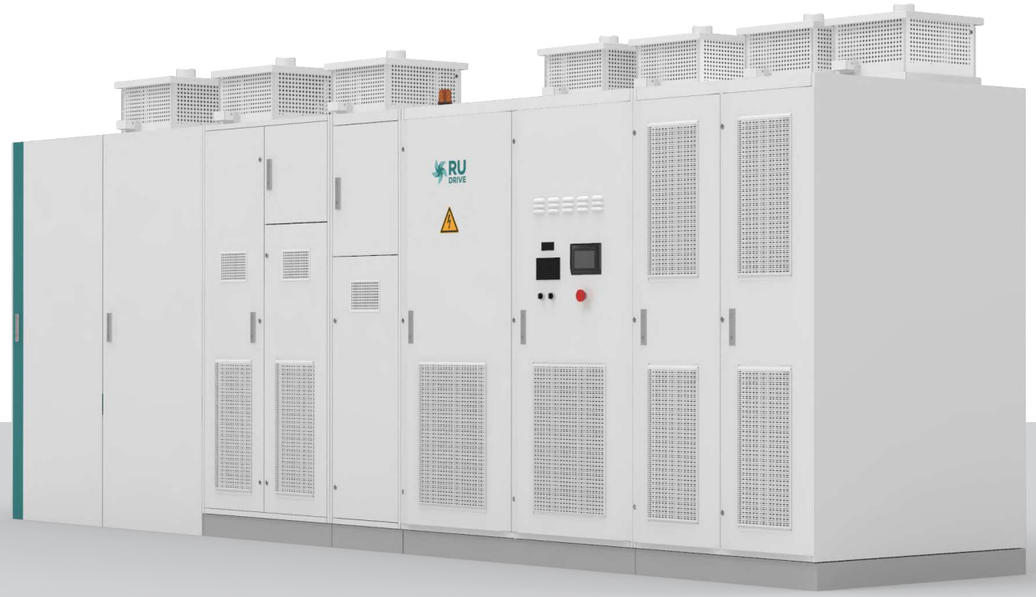
Solves all problems related to voltage notching

Provides a stable power supply; due to the availability of an energy storage system, provides a constant voltage for the rectifier in the DC segment of the inverter, which allows the voltage at the device output to be continuously maintained.

Advantages:

- a time-proved technology of variable frequency drive (inverter part);
- solves all problems with voltage dips and notching within a range of up to 10 sec (optionally, up to 30 sec);
- Maintaining a stable supply voltage and frequency;
- Tolerance to voltage drips in the supply mains and to flickers.

Voltage: 6 - 10 kV

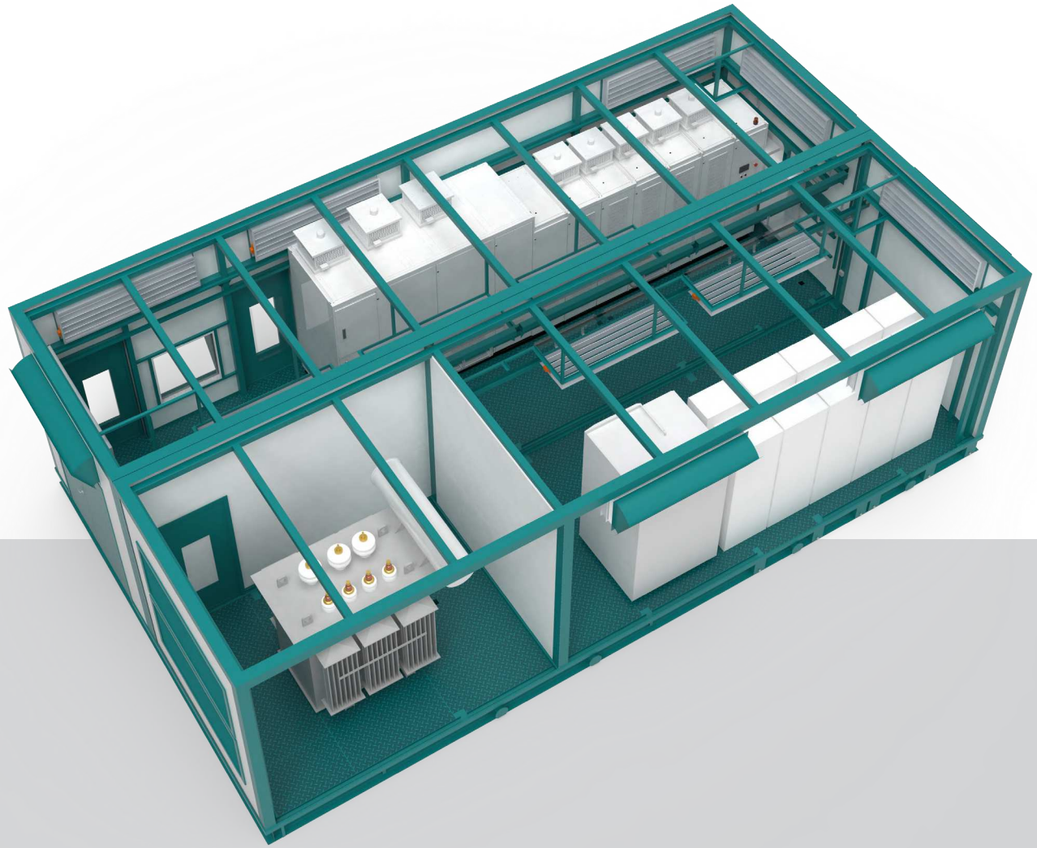


Maintaining a stable supply voltage and frequency

Uninterrupted operation of the power supply system

Tolerance to voltage drips in the supply mains and to flickers

Protection against device emergency modes



DYNAMIC VOLTAGE RESTORE
RU-DRIVE DVR

A unique solution to protect the consumer from fluctuations, deviations, and voltage dips

Main functions:

- consumer's protection against voltage dips of up to 40 %;
- balancing the mains voltage;
- constant-voltage regulation;
- active filtration of the 5th, 7th, and 11th voltage harmonics;
- reactive power compensation;
- combined operating mode.

Power: up to 8 MVA

Voltage: 3, 6, 10, 35 kV

Improves the electric power quality

Enhances the energy efficiency

Extends the equipment service life

Minimizes financial losses from equipment downtime

INDUSTRIAL AUTOMATION

RU-Engineering Research and Production Enterprise provides services for the development and turnkey implementation of DCS projects for water and heat supply pumping stations, as well as water treatment ACS

All solutions developed by our Company are created using both proprietary technology and equipment from leading domestic and international manufacturers.

In addition to electric equipment, we supply all required process equipment for DCS:

- valves and fittings;
- pumps and electric motors;
- compressor plants and blowers;
- modular sewage and water treatment facilities;
- flotation plants, saturators;
- chemical agent stations;
- coarse screens, filters;
- settling tanks;
- bioreactors.

Automation of complex maintenance stages

Analysis of emergent problems

Remote emergency protection and data transmission

Simple and intuitive control of production process and maintenance

CONTROL CABINET SOLUTIONS
RU-DRIVE CCS

Automatic control and monitoring of equipment operation modes in cost-efficient and gentle modes

The automated control and monitoring system is designed for control of industrial processes (DCS), process optimization, process automation, maintaining the optimal operating mode of process units and recording intermediate data, generating and issuing reporting and archive documents, measuring equipment diagnostics in all industrial sectors, such as construction, food, chemical, oil refining industries, etc.

- Automation of complex maintenance stages
- Analysis of emerging problems
- Remote emergency protection and data transmission
- Simple and intuitive control of the production process and maintenance

DISPATCHING CONTROL AND DIGITALIZATION

The dispatching control system allows for a close interaction between different engineering equipment subsystems and provides an automated operating monitoring and control

- control and measuring instruments;
- local in-house DCS systems;
- controlled switching equipment;
- ability to create PCS7-based decentralized automation systems;
- creating dispatching control systems;
- creating traditional SCADA-based systems, including video walls;
- special solutions for a large number of distributed facilities based on WinCC OA.

SIEMENS

EMERSON

Automation of complex maintenance stages

Analysis of emerging problems

Remote emergency protection and data transmission

Simple and intuitive control of the production process and maintenance

GAS PISTON UNITS
RU-DRIVE

Gas piston units made by RU-Engineering Research and Production Enterprise is an universal, effective and functional way of getting electricity.

Gas piston units (GPU) — is powerful and reliable equipment that generate cheap electricity and heat energy. It can work in any climate with high efficiency. Ussualy the efficiency of gas generation plant is about 44%, that means the fuel is burn off without results. To improve such problems RU-Engineering Research and Production Enterprise performs wasteheat exchanger systems. This solution can rise your efficiency up to 90-95%. All plant are works fully automatically because of well-throught-out control system.

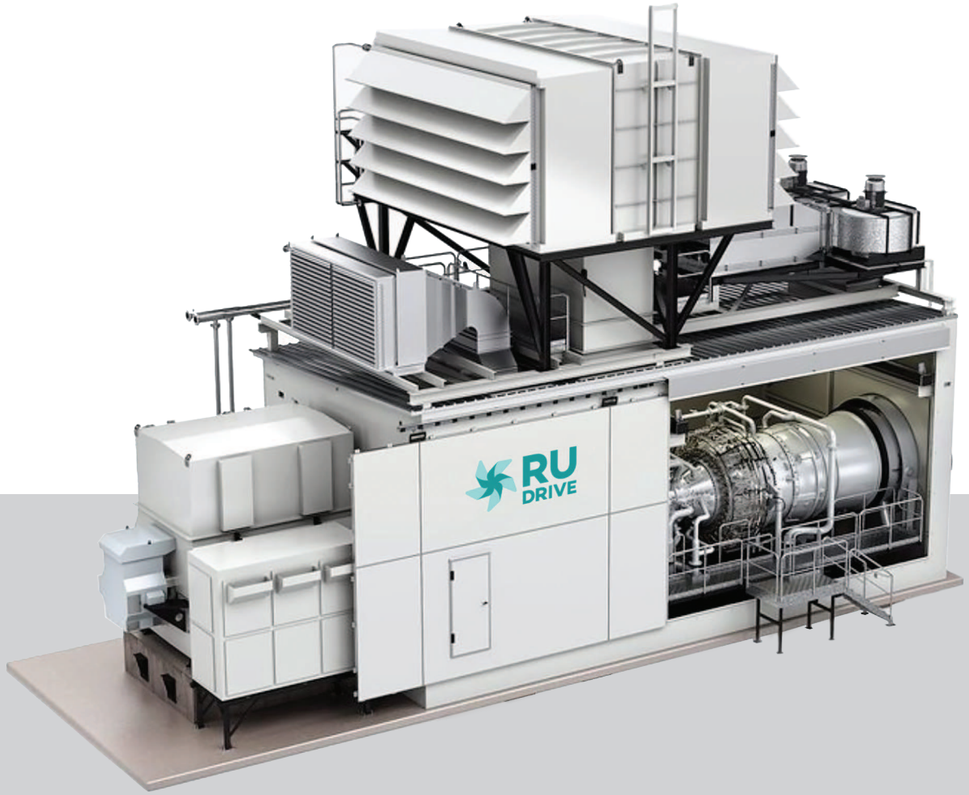
- Heat and electricity generation
- Energy independence
- Commercial efficiency with fast payback
- High-quality and reliable power supply

REENGINEERING OF GAS TURBINE PLANTS AND COMPRESSORS

RU-Engineering Research and Production Enterprise performs reengineering of automation, launching, commissioning, installation supervision, assembly, and maintenance of gas turbines and compressors

Main goals of reengineering:

- increasing the technical independence from a turbine manufacturing plant and engineering firms;
- replacing obsolete and unavailable systems or systems unattended by the manufacturer with new modern ones;
- rejection of closed autonomous systens of the «black box» type creating service tools;
- giving the full access to the programming level;
- providing the Customer with the software source codes;
- ensuring the possibility of system restoration, independent purchase of spare parts.

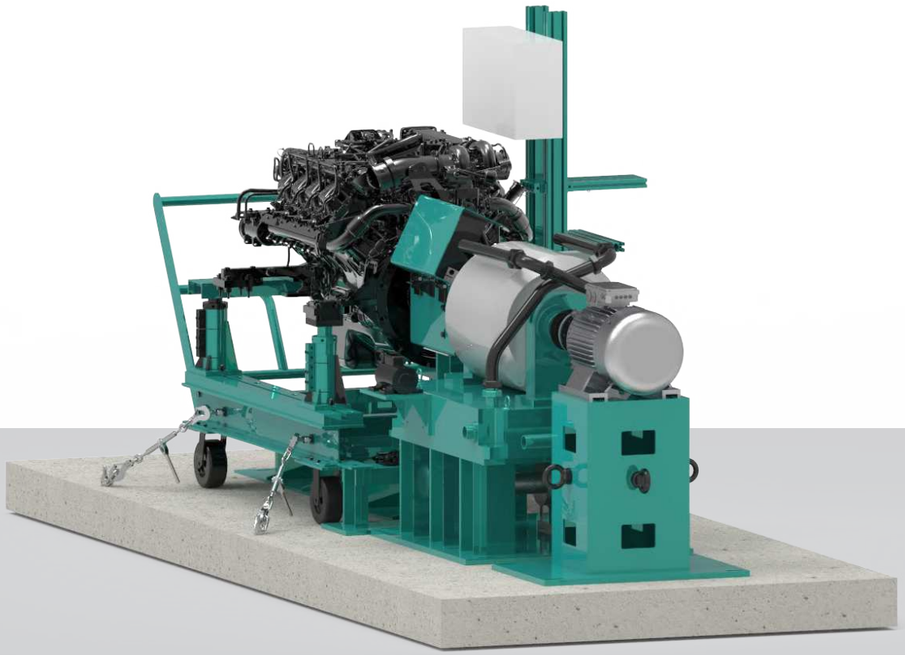


Improved quality, trouble-free operation

Increased diagnostic ability

Optimization of operation in line with actual process conditions

Extending equipment time between overhauls



ENGINE TESTING STAND
RU-DRIVE ETS

Designed for running-in, acceptance, and presentation tests during manufacturing, overhaul and current repairs of internal combustion engines

The stand is a multifunctional recoverable system designed for a long-term operation. The system operation mode: round-the-clock, continuous, with periodic stops to reinstall the ICE under test.

Power:	63 up to 1800 hp
ICE types:	Any type (petrol, diesel, gas engines)

- Function of adjustment and adding self-testing methods
- Maximum automation of the testing and running-in processes
- High reliability and a long service life of the stand
- Storing data about the equipment and stand operations

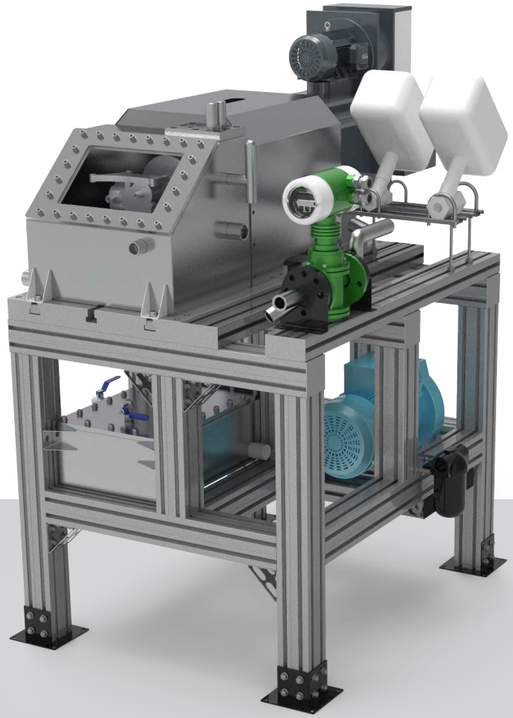
LABORATORY STAND FOR OIL PUMPS

Designed for testing oil pumps of various engine types in an automatic mode

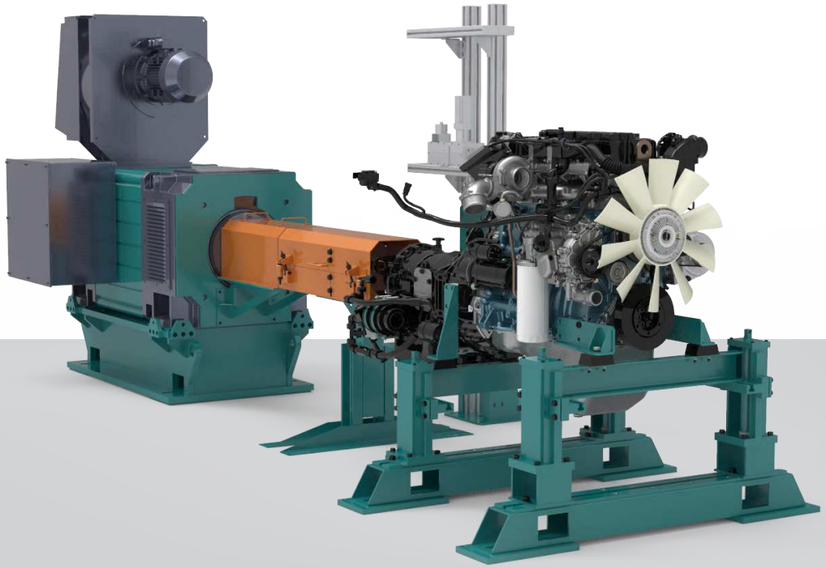
The stand allows to carry out automated running-in, performance control, and leakage check of oil pumps at preset rotation speed and discharge pressure values with the function of maintaining the required oil temperature.

Controlled parameters:

- technical condition of the pump;
- forecast of the pump service life;
- pump volumetric efficiency;
- pump capacity;
- oil pressure;
- oil flow rate;
- oil pump rotation speed;
- oil temperature.



- Easy installation and replacement of pumps under test
- Maximum automation of the testing and running-in processes
- High reliability and a long service life of the stand
- Storing data about the equipment and stand operations



TRANSMISSION TESTING STAND

Designed for carrying out control, research, development, adjustment, and service life tests of gearboxes

The stand allows to carry out automated full-fledged running-in tests, performance monitoring, and diagnostics of transmissions.

Controlled parameters:

- gearbox input shaft speed;
- gearbox output shaft speed;
- retarding (load) torque on the gearbox output shaft;
- time (running-in duration);
- running-in time in one mode;
- transmission ratio.

Function of adjustment and adding self-testing methods

Maximum automation of the testing and running-in processes

High reliability and a long service life of the stand

Storing data about the equipment and stand operations

INDUSTRIAL ROBOTS

RU-Engineering Research and Production Enterprise implements projects for integrating automated robotic systems for performing industrial tasks of any complexity

Depending on the task, robots can feature various sizes, accuracy classes, movement speeds, load capacities, and can have several travel axes.

Robotic complexes are developed on the basis of Japanese **Yaskawa Motoman** and **KUKA** industrial robots.

Number of supported axes:	6 to 72
Carrying capacity:	3 - 900 kg
Operating range:	532 - 4683 mm

KUKA

YASKAWA

The highest accuracy of operations and no scrap

The robot can be adapted for other tasks or for manufacturing new products

The robot is space-saving and can be installed anywhere

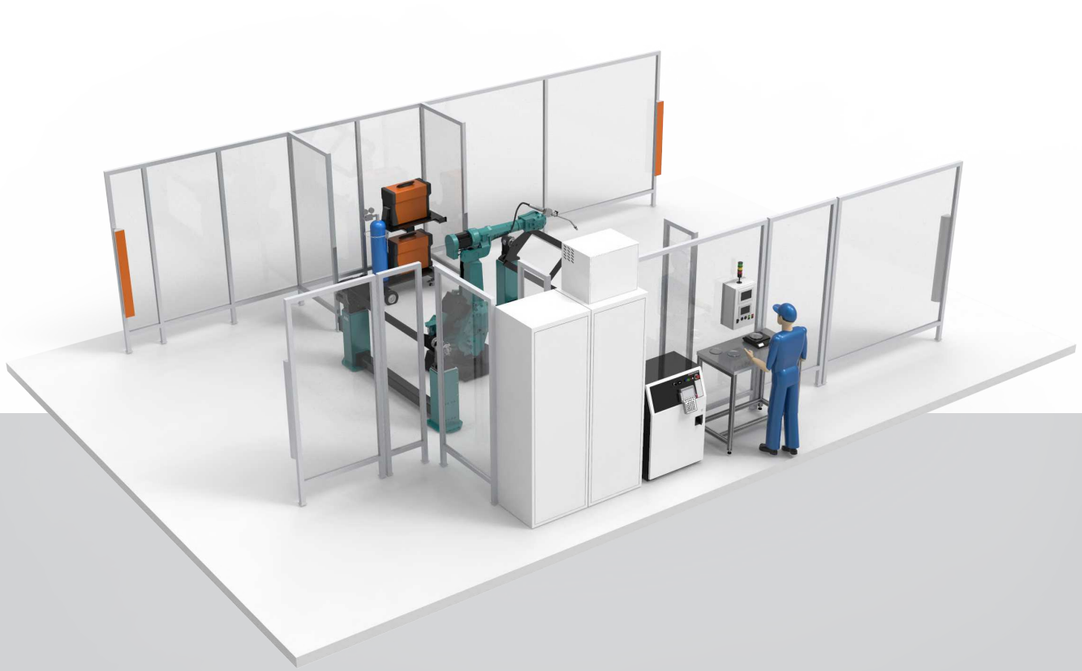
Reduced production costs, less scrap and waste

PRODUCT LINE

INTEGRATION OF INDUSTRIAL ROBOTS

KUKA

YASKAWA



ROBOTIC COMPLEXES

Integration of engineering solutions of any complexity based on industrial robots for:

- arc, plasma, and electric resistance welding;
- gas and plasma cutting;
- machine tool maintenance;
- metal casting;
- cargo movement;
- palletizing of products;
- assembly and painting of products.

We offer a full range of designing, equipping, and completing services, as well as setting up and programming robotic systems.

Robotic systems can automate a large number of production processes with different load ranges.

2–3 specialists – can be replaced by one robot per working shift

20% – an average increase in the production capacity after launching the system

2–4 years – the payback period for purchase and commissioning costs

Reduced production costs, less scrap and waste

HORIZONTAL BORING MILL

The line of **Fermat** horizontal boring mills is represented by a model range of 12 machines with state-of-the-art equipment.

The machines are designed for processing various holes and flat surfaces, both for individual workpieces and for serial production.

Horizontal boring machines can perform:

- drilling;
- boring;
- countersinking;
- cylindrical and face milling;
- internal and external threading;
- turning cylindrical surfaces;
- transversal turning.

Machine types:	with a rotary table/with a clamping plate
Spindle bore diameter:	100 - 160 mm

Maximum automation of the metalworking process

High precision of metalworking operations

We can create a machine configuration that meets your individual requirements

High reliability and long equipment service life

MILLING MACHINES

The **Fermat** machine line is represented by a range of 3 versatile milling machines with PNC.

The machines are designed for processing by milling a variety of surfaces on small-sized and light-weight parts in a single-piece or serial production. Metalworking is carried out with cylindrical, disc, angular, end, shaping, and face mills.

Milling machines are ideal for processing:

- flat and shaped surfaces;
- gear wheels;
- metal and other workpieces;
- hydraulic units;
- pumps;
- molds;
- dies, etc.

Machine types: with a rotary table/with a clamping plate

Spindle bore diameter: 100 - 160 mm

Maximum automation of the metalworking process

High precision of metalworking operations

We can create a machine configuration that meets your individual requirements

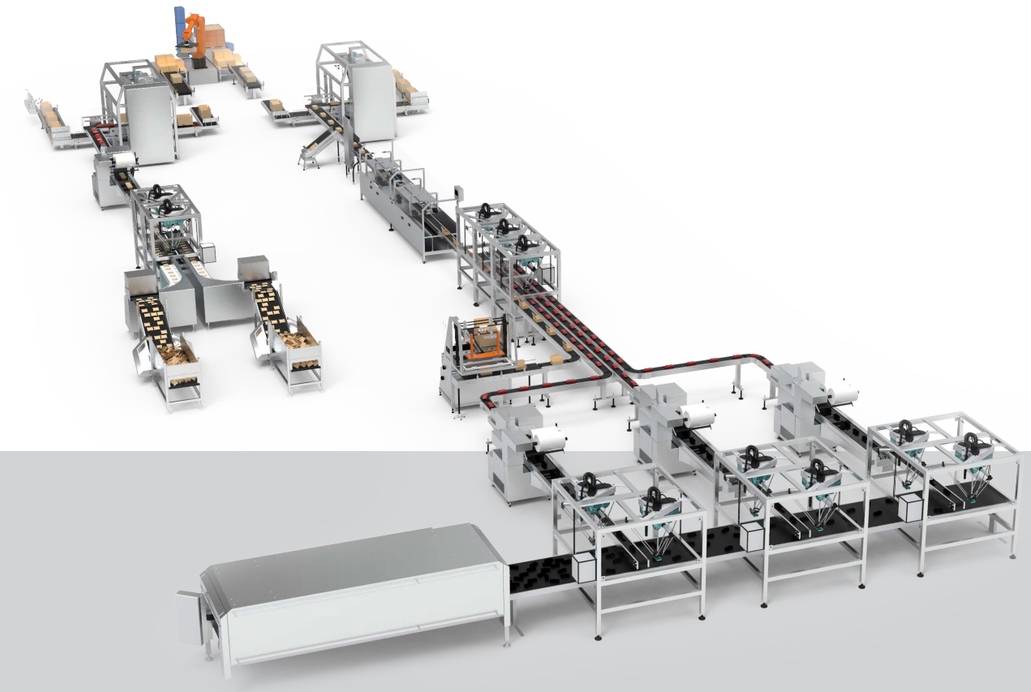
High reliability and long equipment service life

FOOD PRODUCTION LINES

We can design and supply custom-made automatic production lines for various food industries.

Types of automatic lines for food production:

- lines equipped with drying plants for dehydration, processing of wet raw materials (for manufacturing dry products: egg powder, gelatin, etc.);
- lines for processing meat products, manufacturing semi-prepared food products, sausage goods, and canned meats;
- lines for manufacturing fermented milk products;
- lines for manufacturing confectionery products (cookies, sweets, cakes, chocolates, etc.);
- lines for continuous transportation of products (from loading raw materials to packaging, filling, and shipment operations);
- lines with combined, lateral, overhead, and through transportation.

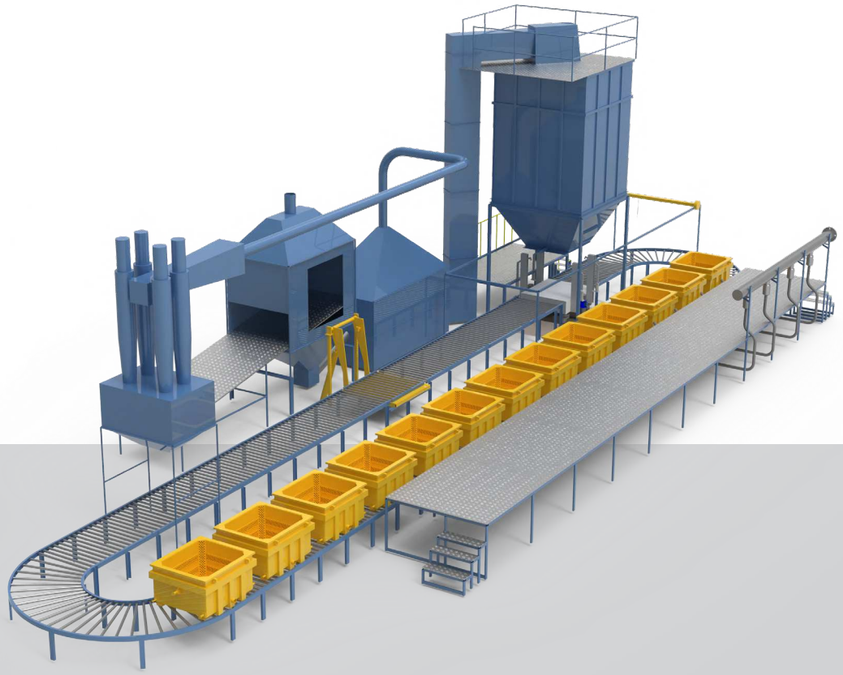


Versatility – you can reconfigure the line for a new type of product

Ensuring consistently high quality and volume of products

Flexible performance management

Reduced production costs, less scrap and waste



METALWORKING LINES

We can design and supply process equipment and automated metalworking lines to ensure the highest accuracy and performance.

Types of automatic metalworking lines:

- lines for cutting, punching, bending, and marking metal, which can be combined with automatic material storage warehouses;
- mold knockout lines;
- electroplating and hot-dip galvanizing lines;
- casting production lines;
- lines for casting workpieces;
- lines for continuous transportation of products (from loading raw materials to packaging, filling, and shipment operations).

Flexible expandable configurations for reconfiguring for a new type of product

Serial production of high-quality products and reduced operating cycle times

Flexible performance management

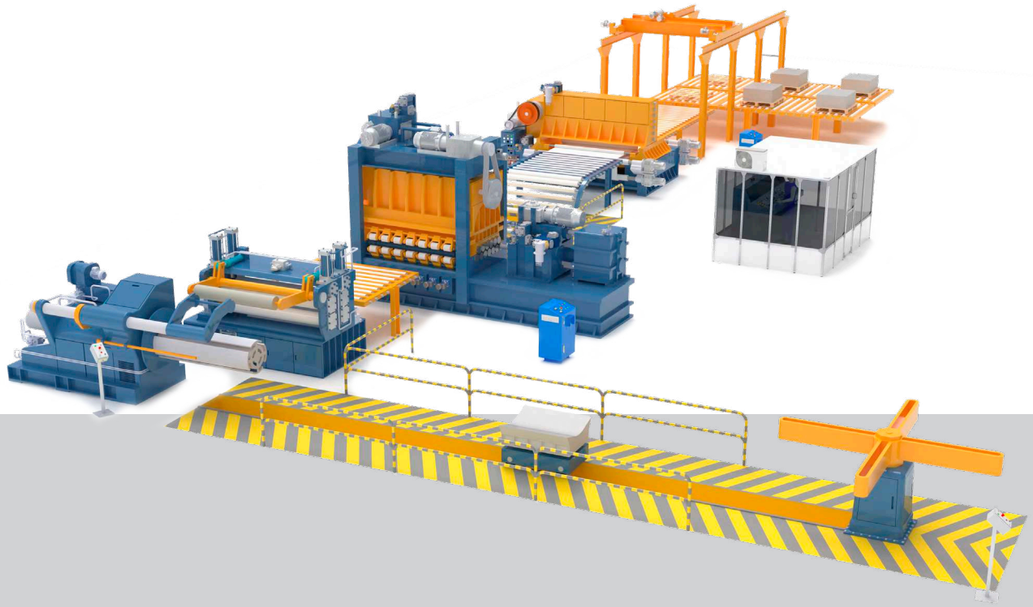
Reduced production costs, less scrap and waste

LINES FOR MECHANICAL ENGINEERING

A system of machines installed along the process line and designed to transform a workpiece into a finished part by performing process operations of machining (assembly), inter-operational transportation, and accumulation of workpieces, loading and unloading the machines, automatic control, etc. The movement of workpieces between machines can be carried out using transport lines.

Types of automatic lines for mechanical engineering:

- lines in forging and pressing production for the automation of cold and hot sheet stamping operations;
- the line is designed for machine working of parts (stamping, rolling-out, pressing, moving, and control);
- electroplating and hot-dip galvanizing lines;
- assembly lines;
- powder coating lines;
- product transportation lines, and many others.



Versatility – you can reconfigure the line for a new type of product

Ensuring consistently high quality and volume of products

Flexible performance management

Reduced production costs, less scrap and waste

BLOCK BOX UNIBOX

The block-box module is a metal structure with outer walls made of sandwich panels that are tightly mounted on a reinforced metal frame

Ideal for accommodation of:

- 6–10 kV complete switchgears (CSG);
- 6-10/0.4 kV transformer substations;
- high-voltage frequency inverters;
- control rooms;
- panel power plants;
- pumps;
- oil and gas metering units.

Temperature parameters: -40° to +40° C

Protection and safety: security and fire alarms; fire extinguishing systems

Layout and equipment depending on the customer's wishes

Space-saving and modular design facilitates the equipment installation and repair

Equipment protection from rain, snow, hail, wind, and sand

Equipment protection from unauthorized access

BLOCK CONTAINER

The container-type block box is made on the basis of a marine all-metal container, the walls of which are sheathed with metal corrugated boards.

The key advantages of block boxes based on marine containers are their rather quick deployment, the possibility of frequent movement by any vehicle, maintenance of normal temperature conditions as required for the trouble-free equipment operation, and versatility of application.

Modular container-type buildings are manufactured under an individual project. They have an individual layout, arrangement of ventilation windows, doors, internal partitions, and inserts for equipment.

Temperature parameters: -40° to +40° C

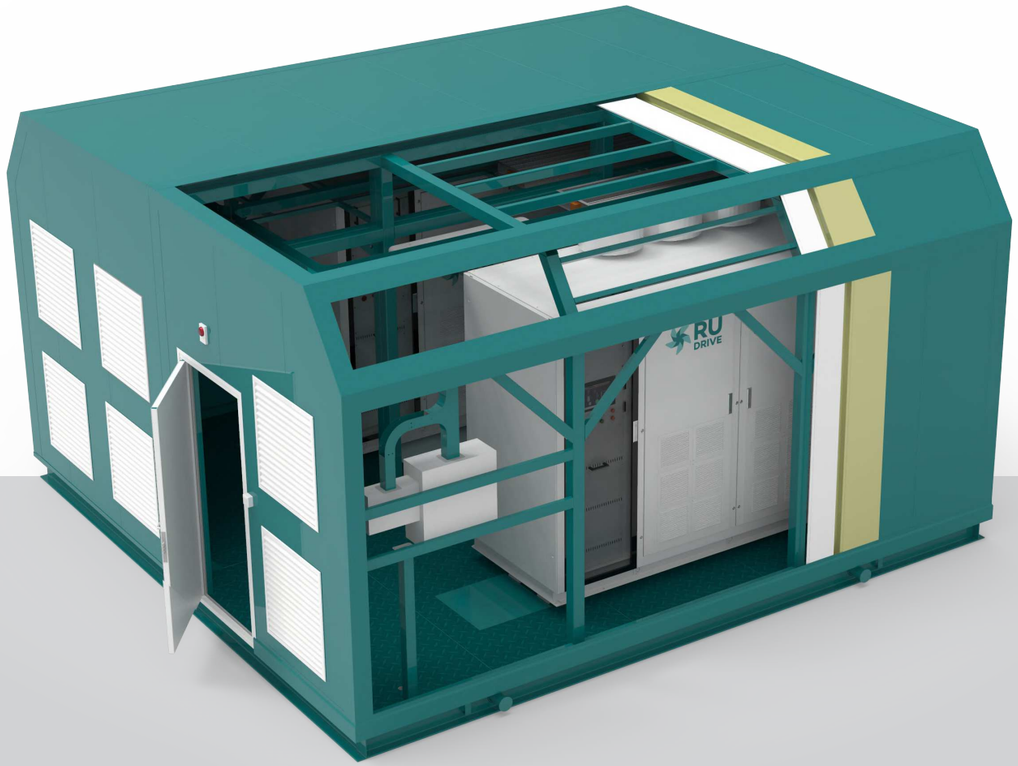
Protection and safety: security and fire alarms;
fire extinguishing systems.

Mobility – the possibility of frequent movement by any transport

Reduced equipment deployment time

Equipment protection from rain, snow, hail, wind, and sand

Equipment protection from unauthorized access



BLOCK MODULAR BUILDING

A mobile framed building of several block-box modules made of a welded high-strength metal frame sheathed with sandwich panels of the required thickness

Suitable for installation of rather bulky equipment; maintains normal temperature conditions as required for the trouble-free equipment operation. The block modular building configuration depends on its purpose.

Block modular buildings are supplied with pre-installed equipment and all the necessary utilities and life support systems:

- lighting system;
- heating system;
- ventilation and air conditioning system;
- automatic fire extinguishing system;
- fire alarm system.

Layout and equipment depending on the customer's wishes

Space-saving and modular design facilitates the equipment installation and repair

Equipment protection from rain, snow, hail, wind, and sand

Equipment protection from unauthorized access

POWER UNIT

A complete product of maximum factory readiness in a modular design with transport dimensions. The equipment set depends on the individual configuration for various process tasks: 6 and 10 kV indoor switchgear; complete transformer substation, variable frequency drive; soft starter; 0.4 kV low-voltage package module; DCS

A power room is an integral part of a modular group pumping station (MGPS). It is used for automatic control of pumping units, monitoring the parameters and signaling the status of process equipment; for equipment protection upon changing the process parameters beyond acceptable limits, automatic shutdown of a pumping unit and turning on a backup one.

Made in the form of standalone block boxes of maximum factory readiness, mounted on site in a single building and functionally interconnected by service and electrical lines. We use three-layer metal boards with mineral wool insulation as block box walls and partitions.

- Mobility – the possibility of frequent movement by any transport
- Reduced equipment deployment time
- Equipment protection from rain, snow, hail, wind, and sand
- Equipment protection from unauthorized access

BOILER STATIONS

KER-Energy, LLC produces:

• Hot-water block modular and stationary boiler houses up to 200 MW

Designed for heating, ventilation, and hot water supply to buildings and facilities for various purposes with a working pressure in the heat supply system of up to 0.6 MPa and above and a heating medium temperature of up to 115 °C and above.

• Steam and steam-water heating boiler houses

Designed to provide the process needs in steam with a working (excess) steam pressure

of up to 0.07 MPa and above and a temperature of up to 210 °C.

• Gas piston power plants

Used as a backup, auxiliary, or main source of electric power at production enterprises, in construction, in administrative and health care institutions, at airports, hotels, etc. They can operate both independently and together with centralized power supply systems.

Boiler houses are made in a multi-block design under an individual project based on the customer's needs. Boiler houses can operate in an automatic mode without maintenance personnel.

PACKAGE OF SERVICES PROVIDED:

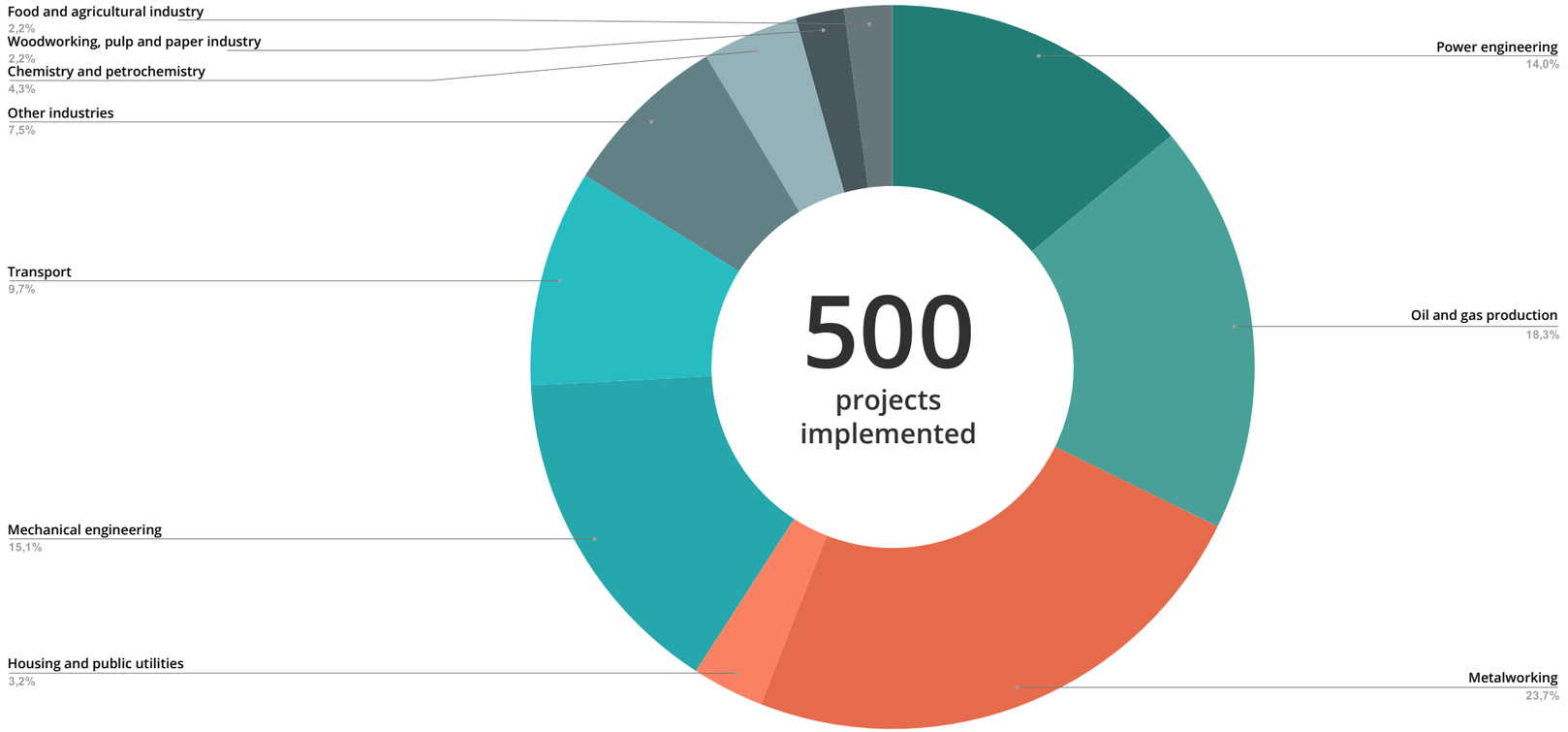
- installation and equipment of boiler houses and power centers;
- reconstruction and upgrading of energy facilities;
- construction and installation of gas consumption and gas distribution systems and utilities

KEY PROJECTS

Over the history of our Company, we have implemented over 500 projects throughout Russia and abroad.

The main consumers of our products and services are major Russian and foreign businesses.

Products under the RU-DRIVE brand are supplied to all regions of Russia, to Kazakhstan, Uzbekistan, Turkmenistan, and other countries.



KEY PROJECTS

TOMINSKY MINING PLANT, JSC

RUSSIAN COPPER COMPANY

THE RUSSIA'S LARGEST STATIC REACTIVE-POWER COMPENSATOR

Project for the supply of RU-DRIVE SVG static reactive power compensators to a facility under construction for a copper ore extraction and processing enterprise – Tominsky Mining Plant, JSC, a company of the Russian Copper Company holding. 2020.

PROBLEM

Compensate the reactive power and harmonics generated by ball mills and autogenous tumbling mill.

SOLUTION

Based on the initial data, we calculated and selected the equipment. As a solution to the problem, we suggested to install two static reactive power compensators with a voltage of 35 kV and a power of 45 MVAr for operation in the power supply system of mill gearless drives.

During the project implementation, we faced the need for additional compensation of reactive power consumed by mills. For this reason, we signed a new contract for the supply, installation, and commissioning of two additional RU- DRIVE SVG 35 kV 45 MVAr static reactive power compensators in an outdoor design (container type).

BENEFITS

Upon completion of this project, the total capacity of four RU-DRIVE SVG units operating in parallel as a single system and solving all problems related to the power supply quality to the concentration plant of Tominsky Mining Plant, JSC, was 180 MVAr, which is the largest static reactive-power compensator in the Russian Federation up to date.

STATIC REACTIVE-POWER COMPENSATOR TO MAINTAIN VOLTAGE IN A CATENARY

Supply of RU-DRIVE SVG static reactive power generators in a block box for Lebedinsky Mining Plant, JSC. Substation No. 137. Gubkin, Belgorod Region, 2019.

PROBLEM

Maintaining voltage in a catenary at a level sufficient to provide the necessary traction power for railway transport.

SOLUTION

Supply of two RU-DRIVE SVG static reactive power compensators with an operating voltage of 10.5 kV and a power of 5.7 MVAr in a block modular design.

BENEFITS

- we have solved the problem of lowering the voltage in the railroad overhead catenary: the voltage during the movement of cars loaded with iron ore does not fall below 10 kV;
- we have increased the throughput capacity of a railway section at the open pit of Lebedinsky Mining Plant, JSC;
- we have improved the energy efficiency of the traction power supply system.

METALLOINVEST MANAGEMENT COMPANY, LLC

KEY PROJECTS

ROSNEFT, OJSC

POWER ROOM FOR CONTROLLING A MODULAR GROUP PUMPING STATION

RN-Yuganskneftegaz, LLC. Tyumen Region, Khanty- Mansi Autonomous District, 2018.

PROBLEM

Water supply to a reservoir pressure maintenance system.

SOLUTION

Supply of a power room consisting of 6 power units:

- a hardware unit, pump control cabinets, ventilation control, fire extinguishing systems;
- a low-voltage package module, low-voltage equipment cabinets;
- 5 thyristor exciters for 2 000 kV synchronous motors;
- 0.4 kV complete transformer substation unit No. 6 with low-voltage switchgear cabinets;
- a RU-DRIVE VFD with a control cabinet, power switching;
- a 6 kV switchgear unit with outgoing and incoming lines, additionally equipped with fast automatic transfer switches.

BENEFITS

- the power room provides for remote control and monitoring of operating modes at the station;
- VFD provides for smooth operation of motors and saves energy by supplying a voltage of a given frequency and amplitude at the device output. The complete VFD is designed to operate with 5 motors with variable starting.

RU-DRIVE SVG
EXPERIENCE OF DEPLOYMENT ON THE RAILWAY

Installation of RU-DRIVE SVG container-type static reactive power generators at sectioning posts of 14 railway stations.
Period: 2018–2019.

PROBLEM

Eliminate the infrastructure restrictions in terms of throughput capacity between railway stations; stabilize the voltage and reduce the reactive energy consumption in inter-substation zones.

SOLUTION

Launching fourteen container-type RU-DRIVE SVG 27.5 kW high-voltage static reactive power compensators at sectioning posts of 14 railway stations: Zarinskaya, Alambay, Dikaya, Yakshanga, Nikolo-Poloma, Pankrushikha, Taradanovo, Brantovka, Komarikha, Orichi, Pozdino, Shekshema, Shelomovo, and Chyornaya Rechka.

BENEFITS

- we have increased throughput capacity on hauls between stations by an average of 1–2 freight trains per hour;
- we have reduced train intervals by an average of 18–20%;
- we have stabilized the voltage, reduced consumption of reactive energy in the inter-substation zone and the content of higher harmonic components in the traction network voltage.

Russian Railways









SEVERSTAL, OJSC

THE FIRST EXPERIENCE OF LAUNCHING THE BRAND-NEW RU-DRIVE SVG

Supply of ten RU-DRIVE SVG static reactive power generators for Karelsky Okatysh, JSC. Kostomuksha, Republic of Karelia, 2015.

PROBLEM

Provide sufficient and stable voltage for production workshops of Karelsky Okatysh, JSC, reduce electric power losses.

SOLUTION

Installing ten container-type static reactive power generators of the RU-DRIVE SVG product line at main step-down substations No. 5, 6, and 14 with a total power of 24 MVAr.

BENEFITS

- we have eliminated undervoltage and overvoltage in the bus-bars of main step-down substations No. 5, 6, and 14;
- we have reduced the active power consumption by 3.5–7 MW depending on load modes;
- we have reduced the reactive power consumption by 20–24 MVAr;
- we have reduced overall level of higher harmonics.

UPGRADING THE FIRING MACHINE AT A PELLET FACTORY

Launching an DCS at the Sokolovsko-Sarbayskoye Mining and Concentration Association (SSGPO) in Rudny, Kostanay Region, Republic of Kazakhstan, 2019.

PROBLEM

Reconstruction of the firing machine No. 7 at the pellet factory in Rudny. SSGPO, JSC.

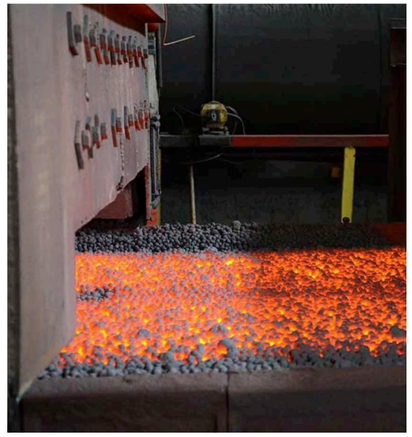
SOLUTION

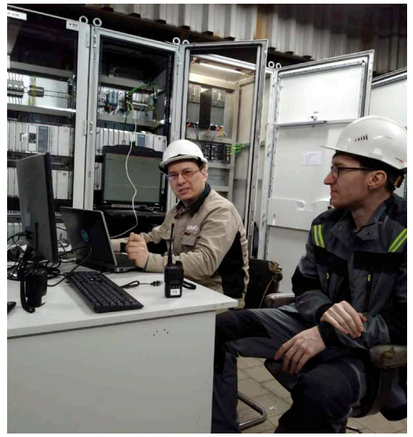
Launching an automated process control system (DCS) which provides for implementing three subsystems:

- control of the pellet heat treatment on the firing machine (the firing subsystem);
- control of the raw pellet production process (pelletizing);
- control of the flow transport system (FTS).

BENEFITS

- the system solves the problems of FTS electric drive control at pelletizing lines;
- implements the control of the firing machine and auxiliary equipment that ensures its operation (smoke flue-gas pumps, fans, exhauster)
- we have created conditions for stable operation of the firing machine and for a guaranteed maintenance of its performance parameter in order to improve the quality of fired pellets;
- we have reduced the gas consumption due to the use of state-of-the-art and high-precision automation equipment.





TURKMENNEBIT STATE CORPORATE GROUP

REENGINEERING OF A GAS TURBINE PLANT

Experience of implementing a project for the reengineering of gas turbine plants at the largest gas and oil fields in Turkmenistan.

PROBLEM

Reengineering, upgrading, and ACS for:

- General Electric Mark VI gas lift compressor stations with a turbocharger (3 pcs.);
- SIEMENS SGT-300 (2 pcs.) gas turbine plants;
- MAN Turbo (6 pcs.) turbocompressor plants at the Korpeje field;
- one MAN Turbo THM-1304-11 turbine generator set at the Korpeje field.

SOLUTION & BENEFITS

- analysis of archives and existing project problems;
- examination of the Checklist system and correction of all electrical circuits, connections, etc.;
- inspection of equipment and acceptance of construction and installation works;
- modification or correction of software algorithms;
- purchase and replacement of obsolete or unavailable systems and system unattended by the manufacturer with new ones;
- optimization the processing of current parameters and visualization of the production process;
- creating virtual images of the system and simulation of its operation;
- start-up and commissioning of an ACS for gas turbines, generators, and turbochargers;
- launching the system for pilot operation;
- carrying out the scheduled maintenance.

DCS FOR TURBINE GENERATORS
ELABUGA GTP-TPP

Performance of works on an DCS for four Solar Taurus-60 turbine generators during the construction of a GTP-TPP with an installed electrical power of 20 MW and thermal power of 28 Gcal/hour in Elabuga, 2018.

PROBLEM

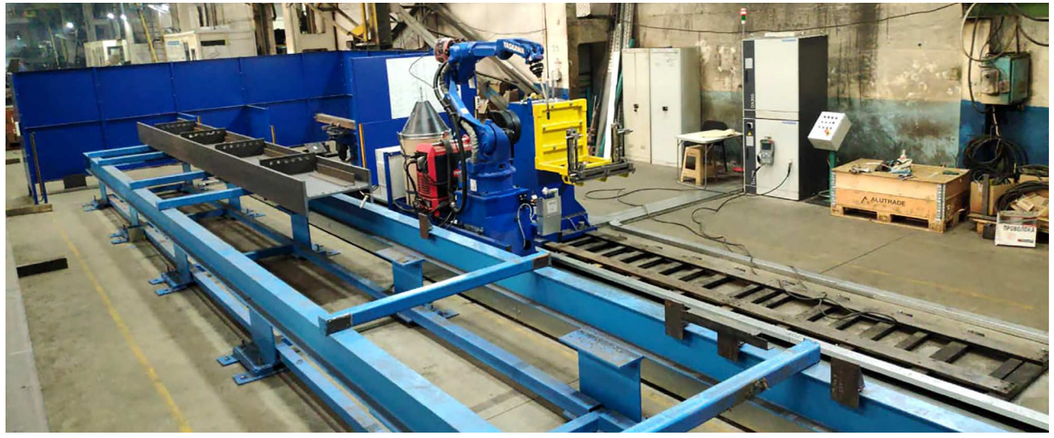
Launching a new GTP-TPP including four Solar Taurus 60 GS gas turbine plants with a capacity of 5.6 MW each and 4 waste-heat boilers.

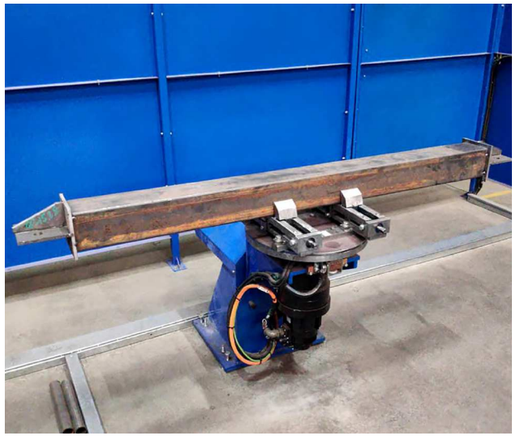
SOLUTION

- acceptance of equipment and the software and hardware system;
- audit of all complete software for gas turbine plant control;
- adjustment and testing of the control system, sensors, and actuated equipment;
- start-up and commissioning for the equipment of the ACS start-up and commissioning for the gas turbine plant and waste-heat boilers;
- participation in GTP launches and cold (without ignition) and hot (with ignition) tests.

BENEFITS

- the cost of generated heat significantly has been reduced due to introducing an efficient technology;
- increased reliability of power supply to consumers;
- reduced maintenance costs;
- heat losses has been reduced by an average of 5–10%.





ROBOTIC WELDING SYSTEM

Launching Yaskawa robotic systems for welding divisions at the TEMPO's Kama Metalwork Plant in Naberezhnye Chelny, Republic of Tatarstan, 2020.

PROBLEM

Automation of the welding process for metal structure beams.

SOLUTION

- supply of a robotic welding system based on a 6-axis MOTOMAN MA2010 robot made by Yaskawa;
- equipping the robot with a FRONIUS TPS 320i welding machine, a 12-meter track to expand the robot workspace when welding large-sized beams, and with a MOTOMAN MT1 manipulator;
- design, supply, installation, and commissioning.

BENEFITS

- increased beam welding speed;
- improved quality of welded seams;
- increased productivity.

ROBOTIC WELDING SYSTEM

Integration of a Yaskawa welding robot into the aluminum fuel tank production line for the «Ring Welding of Caps» operation at the Kama Engine Plant in Naberezhnye Chelny, Republic of Tatarstan, 2018.

PROBLEM

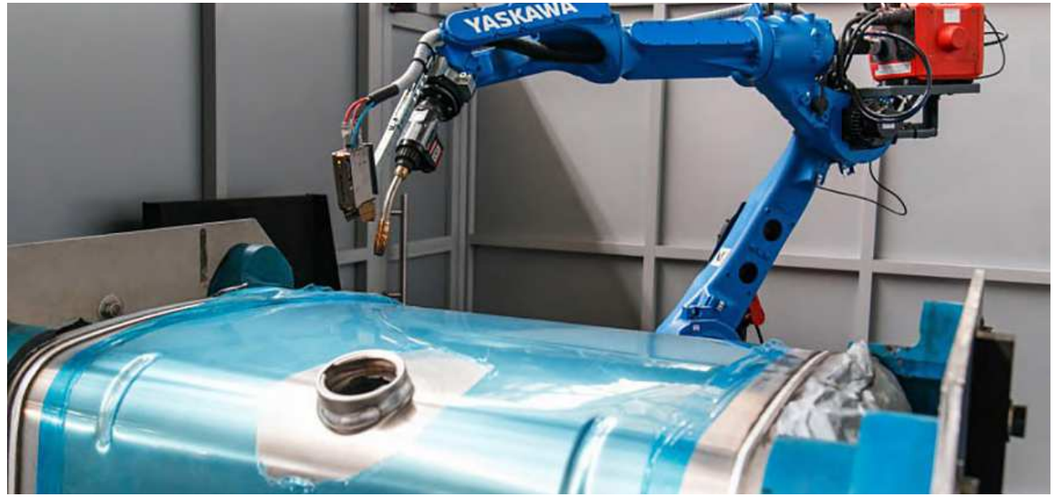
Install a robot with a laser tracking sensor for welding aluminum tank bottoms.

SOLUTION

- integrating a welding robot into the aluminum fuel tank production line for the «Ring Welding of Caps» operation;
- equipping the robot with a FRONIUS TPS 320i welding machine, a triangulation laser welding seam tracking system, a system for automatically cleaning the torch from welding spatter;
- additional equipment of the working area with a protective fence to prevent the entry of maintenance personnel into the manipulator operating zone.

BENEFITS

- high quality welds;
- high performance;
- significantly improved quality of the produced fuel tanks.



KRASNAYA POLYANA SEWAGE TREATMENT FACILITIES

village of Krasnaya Polyana, near Sochi

SCOPE OF WORK:

- Construction of the Krasnaya Polyana sewage treatment facilities in cooperation with Biotechprogress Research and Production Enterprise, JSC.
- The full cycle of work from design to commissioning includes: a sewage pumping station, a mechanical treatment unit, a biological treatment unit (anaerobic, anoxic, and aerobic reactors; blowers, settling tanks), membrane bioreactors (reactors, chemical and backwash plants, automatic strainers, pumping and compressor stations), tank and vessel facilities, a plant for polymer pre-treatment and dispensing, a sludge dewatering plant, a gaseous emission treatment plant, ventilation plants, and other auxiliary equipment.
- Full automation and dispatching control of the Krasnaya Polyana sewage treatment facilities with a capacity of 15,000 cu.m per day for the Olympic Games in Sochi 2014.

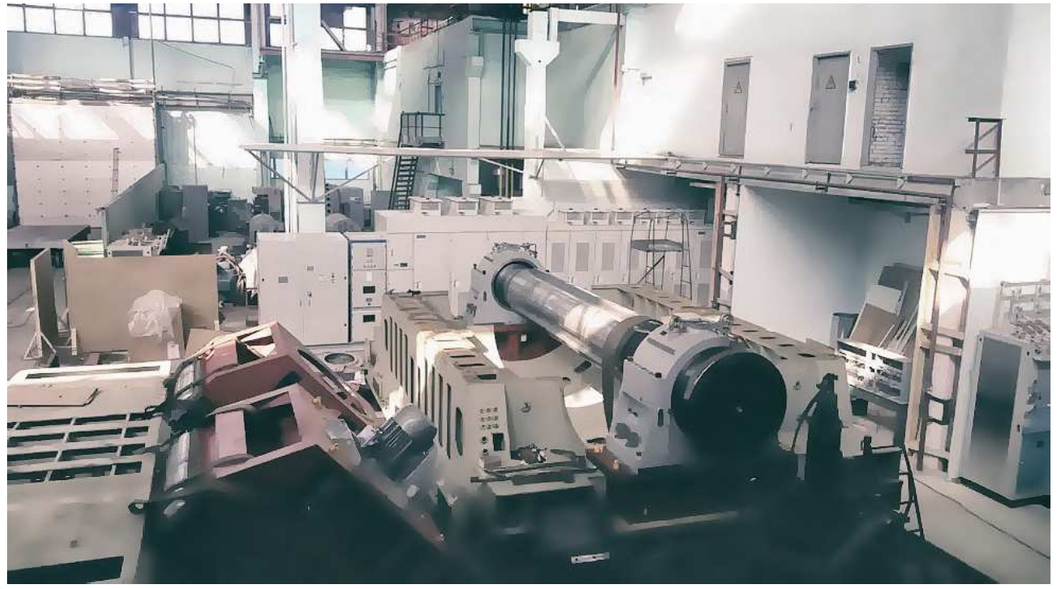
TESTING THE ENGINES OF THE ARKTIKA NUCLEAR SHIP

CUSTOMER:

- Ruselprom, OJSC. Leningrad Electric Machine Building Plant.

SCOPE OF WORK:

- Supply of RU DRIVE VFD 5 000 kW 6 kV frequency inverters; a bench for testing the main drive motor of the brand-new Arktika nuclear ship.
- Full cycle of works from design to installation and commissioning.



AUTOMATION OF LOCAL HEAT SUPPLY FACILITIES

Naberezhnye Chelny

FACILITY:

- Generating Company, Naberezhnye Chelny Heating Networks, relay pump station No. 9, 5 pumping units, 630 kW 6 kV.

SCOPE OF WORK:

- automatic control of the pumping station;
- energy saving due to the use of a variable frequency drive;
- security and fire alarm systems;
- video surveillance with video output to a control room;
- monitoring of pump temperature and vibration and heating network parameters.

RECONSTRUCTION OF EIGHT PUMPING STATIONS

CUSTOMER:

- Uzbek Metallurgical Plant, JSC

SCOPE OF WORK:

- supply of Wilo pumping units, RU-DRIVE power switching cabinets with frequency inverters and control cabinets for pumping stations, automated working station operators, remote measurement instruments, and supply of instrumentation and control products;
- a total of 43 pumping units upgraded.

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