RusTechnology
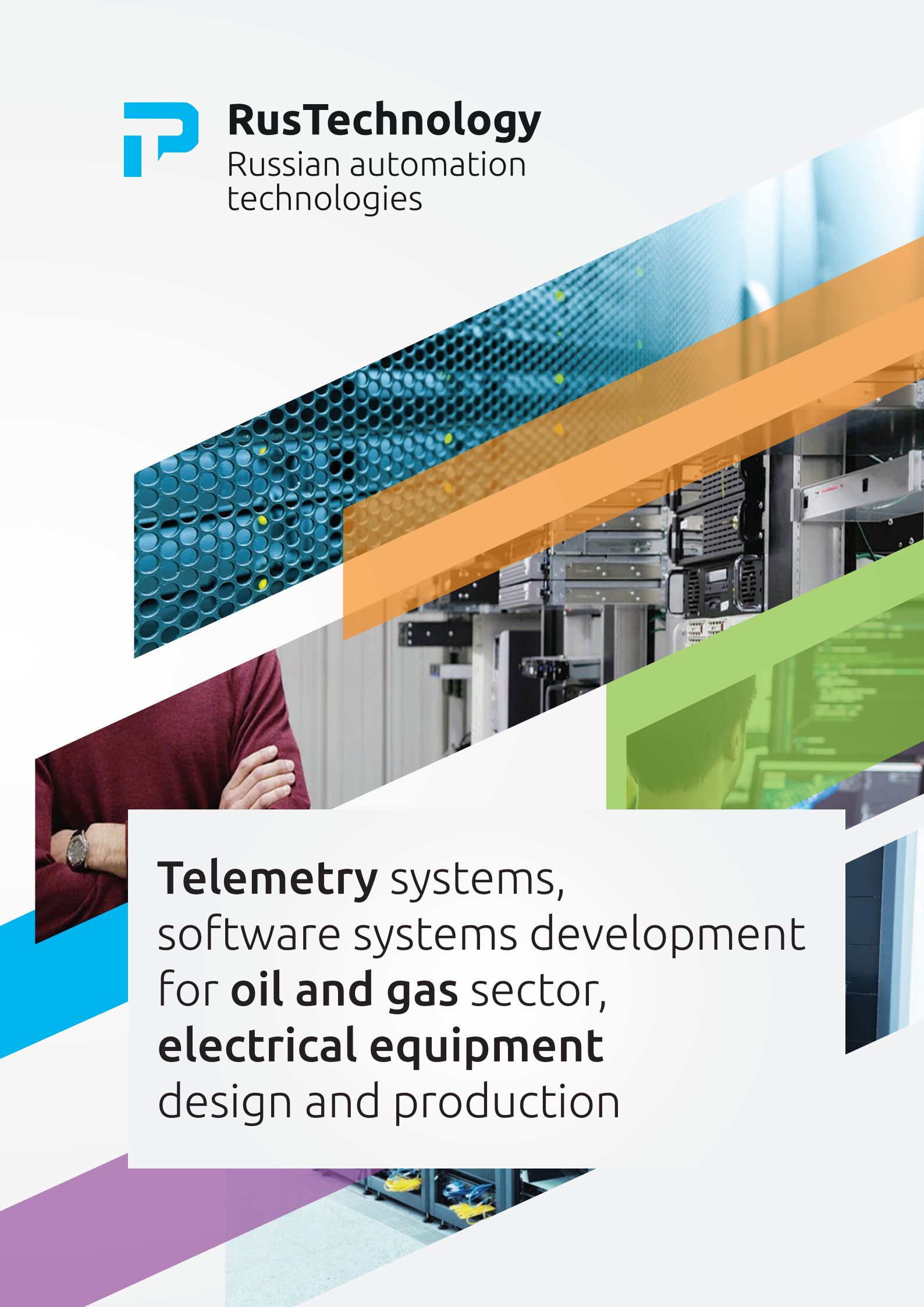
Russian automation
technologies

Telemetry systems,
software systems development
for **oil and gas** sector,
electrical equipment
design and production

Contents

ABOUT US

The company "RusTechnology" is a developer and manufacturer of energy-efficient equipment (intelligent telemetry blocks for domestic and industrial gas metering units), as well as carries out design and implementation of integrated monitoring and control systems for water and gas supply facilities.

Using the developed software of the upper level, the company "RusTechnology" integrates the systems into a single remote control over the territorially distributed objects of the gas supply network.

✔ **Autonomous telemetry complexes f**or the industrial and domestic sector.

✔ **Control panels SCADA, Web-telemetry,** communication software.

✔ **Mobile applications for devices** based on Google Android and Apple iOS.

Equipping gas distribution network objects, such as **industrial and domestic gas metering units,** with telemetry systems, allows not only promptly receive reliable information from a large number of abandoned objects, but also significantly improve safety and operational reliability of the gas supply system due to increased efficiency management and prevention of emergency situations.

TELEMETRY SYSTEMS

The BBT-x unit provides data transmission on natural gas consumption to the gas supplier's server through the GSM digital cellular radio network in packet (GPRS) mode.

Autonomous telemetry system for the household sector based on the BBT-x telemetry unit

Autonomous system for data collection from utility gas metering stations based on the BBT-x communication module (hereinafter telemetry system) is designed to **monitor the operating parameters of household gas meters** and transmit the received information via the GSM / GPRS cellular communication channel to the data collection server and the workstation of the operator and other users of the telemetry system.

The telemetry system based on the BBT-x unit **automatically transmits** the accumulated volume of gas consumption via the GPRS communication channel to the data server in the automatic mode at a specified time (in normal mode, the archive content is transmitted once a month).

- ✔ **5 years** of battery life, transfer of information once a month.

- ✔ **Server software** for data processing.

- ✔ **Integration** with already used data accounting systems in the enterprise.

- ✔ **Affordable price,** absence of intermediate devices for collecting data.

- ✔ **Perfect solution** for the payment monitoring of utility services for rented housing.

Telemetry units for domestic gas meters

The BBT-x unit is powered by an autonomous power supply (lithium battery) located inside the casing, which ensures autonomous operation of the telemetry system for **at least 5 years** in the regular mode.

- ✔ **BBT-4** - telemetry unit with stand-alone power supplypulse input .

- ✔ **BBT-5** - telemetry unit with stand-alone power supply reed switch.

- ✔ **BBT-6** - telemetry unit with stand-alone power supply, memory module (ability to store a data archive (1 year), is used in the public utility sector, for counters with thermal compensation (as an alternative to a corrector with external power supply).

Telemetry Units with power supply

✔ **BBT-1** - telemetry unit with external power supply.

✔ **BBT-2** - telemetry unit with stand-alone power supply.

✔ **BBT-3** - telemetry unit with gas detector support.

✔ The unit is manufactured in the climatic version of UHL category 3 according to GOST 15150-69.

✔ On the resistance to mechanical influences the unit belongs to the group of performance N1 according to GOST R 52931-2008.

✔ According to the degree of protection from the environment, the unit corresponds to IP 52 according to GOST 14254-96.

The products are manufactured in accordance with TU 4035-004-00409864-2016, the certificate of conformity No. РОСС RU.ПЩ01.Н01243, 3825/15.

Server software and telemetry system user interface

End users are authorized in the telemetry system via a **Web browser** and can view monthly archives by consumption (meter readings) from anywhere in the world with access to the Internet.

It is possible to display the received indications (data) both in the form of tables and graphs. Export is carried out manually or automatically in the formats **XLS, PDF and 1C.**

The BBT-x telemetry system users can also download free mobile applications developed by our specialists for remote viewing of data on the consumption of resources from their mobile devices running **Apple iOS** or **Google Android**.

DATA STORAGE SERVER

We are the No.1 company in Russia in the field of development and implementation of cloud technology platforms and services.

The data collection and storage server is a **SaaS (Software as a Service)** solution. It is a model of ready-made cloud applications that allow you to replace software that has been traditionally installed locally and use it from the cloud, **excluding the costs** of installing and maintaining network equipment and related software.

SOFTWARE AS A SERVICES (SAAS)
SOFTWARE AS A SERVICE DEVELOPMENT OR SUBSCRIPTION BASED SOFTWARE DEVELOPMENT

Features of SaaS services:

✔ The application can be accessed remotely by different devices and web clients, there is no need to install special software for workplaces.

✔ One application can be used by many customers.

✔ All software updates happen invisibly to customers.

Advantages of our solution:

✔ The data server can be placed in a **private** or **public cloud.**

✔ The availability of **fault tolerance** increases the reliability of the entire complex as a whole.

✔ As the amount of information processed increases, it is possible to **scale the system horizontally** by using load balancing based on the haproxy tool.

✔ **A convenient and multifunctional web interface** provides a huge set of tools for visualization and information analytics. Different diagrams, graphs and mnemoschemes will make it possible to visually see information on gas consumption.

✔ **The ability to export data** allows you to get metrics in the formats CSV, DBF, XLS, etc., thereby simplifying the mechanism of importing information into the company's internal billing system.

✔ **The encrypted communication channel** based on SSL technology will allow to secure the user from hacking the account and stealing his data.

✔ **The built-in web service** based on the SOAP protocol makes it possible to simplify and accelerate the integration of external software systems with the data collection server.

✔ **A flexible system of roles** allows you to split access levels, highlighting each group of users its own set of available and possible actions. The system can be used both by employees of gas transport companies, as well as by owners of accounting centers, viewing information about consumption in the online mode within their authority.

END-TO-END ENTERPRISE VIRTUALIZATION

Application of the methods of end-to-end virtualization makes us the only integrators in Russia providing the most optimal and reliable IT infrastructure for enterprises.

Our solutions are based on the idea of building **"private" clouds** of the enterprise, with the implementation of end-to-end virtualization.
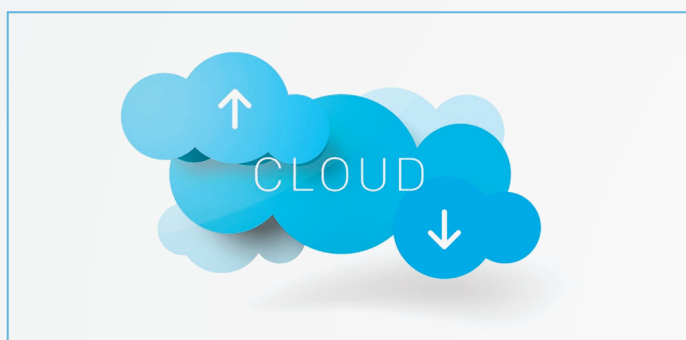
Virtualization is subject to the data centers themselves (in many respects the problems of heat removal from server ones are eliminated) - they become distributed on the local network of the enterprise.

Virtualization of workstation equipment - several workstations are organized on one computer without additional hardware (multi-terminal solution).

This computer, due to the isolation and virtualization of the client equipment, plays the role of a session server, both the data center cluster units, and the VDI solutions server. As a basis for the data center, we offer Cloud solutions that support a combination of several virtualization platforms. If it is necessary to organize secure data centers, we are partners of NPO RusBitech and we have the opportunity to deploy data centers on **Astra Linux Special Edition** and the virtualization and management software package, thus we are able to meet the most stringent requirements of regulators for the protection and processing of information including the state secret.

All these solutions are **integrated by us into a single infrastructure** through the middleware of our own production.

All our solutions have been tested at a number of large energy companies for more than 10 years and have received international recognition. They can make an alternative to any proprietary solutions.

Multi-terminal solutions have been in operation since 2004 and serve up to 95% workstations.

All these technologies provide a guaranteed solution to the problems mentioned above and have repeatedly proven their own high efficiency.

SOFTWARE COMPLEXES

The use of open source code (OpenSource) allows for routine maintenance and upgrading without the use of a software developer.

Technological parameters monitoring system of utility networks and distribution points, early warning, prevention of emergency situations.

The software complex has a multilevel modular structure with high flexibility of implementation, scaling and subsequent modification of both hardware and software components.

We offer a fully debugged hardware and software complex of high availability. Modules are designed and manufactured by one developer, which eliminates inconsistencies or incompatibilities between hardware and software components.

High reliability of the complex, advanced self-diagnostic tools lead to a significant reduction in operating costs. All this significantly reduces the total cost of ownership.

* There are software implementations of this system for gas, heat, electricity and water supply.

- ✔ Hardware and software system "Scheme of gas pipelines, graphs of gas parameters"

- ✔ Hardware and software system "Acceptance of indications from automated gas metering units and gas distribution stations"

- ✔ Subsystem "Integrated parameters control of gas distribution stations"

- ✔ Software remote control of valves (dampers) of gas distribution networks

- ✔ Hardware and software system "Gas consumption control system"

The main tasks solved by the system are:

✔ dispatching the parameters of the gas supply system in real time;

✔ Providing automatic control of technological processes in normal, transitional and emergency modes of gas distribution;
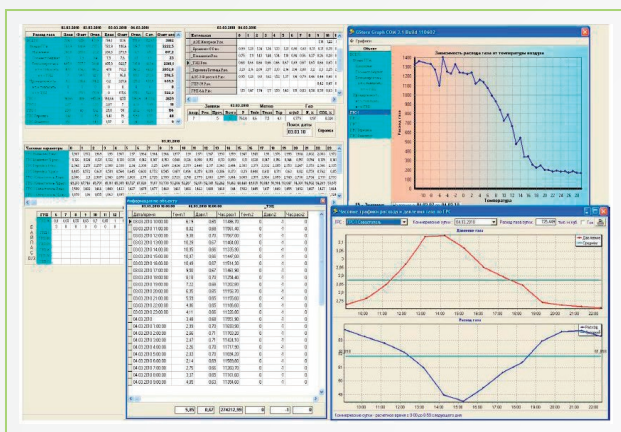

✔ Timely submission to operative personnel of sufficient and reliable information on the progress of technological processes, the state of equipment and technical controls in digital and graphical form;

✔ Prevention of damage to the gas and heating equipment of the hydraulic fracturing unit, reducing the frequency of roundabouts of gas distribution points in order to monitor their condition;
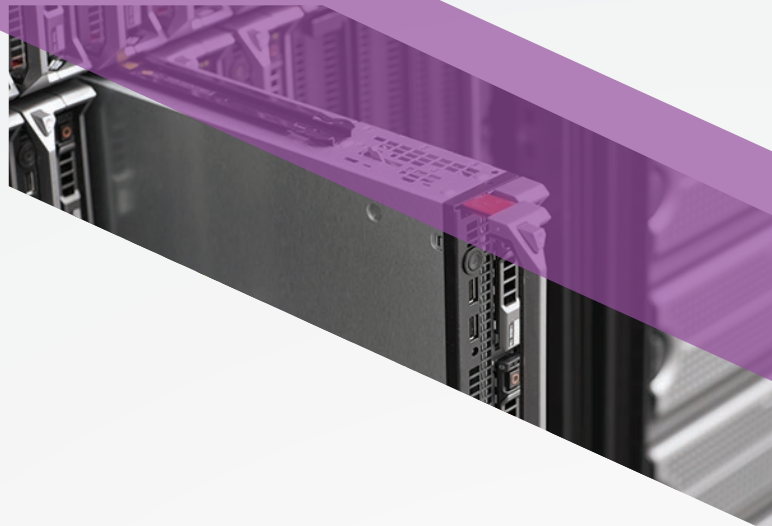
✔ use as an early warning system and prevention of emergencies;

✔ organization of control and management of remote gas distribution points, remote control of valves, dampers;

✔ accumulation of statistics, analysis and forecasting of parameters in gas distribution networks;

✔ Reduction in the costs of operation and repair of automation equipment and improved planning of preventive maintenance and current repair of equipment;

✔ Operational control of gas consumption discipline.

Integrated oil product accounting system
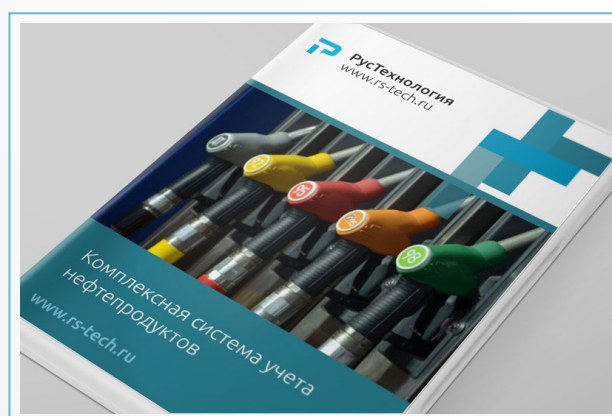
Our company has developed a comprehensive automated oil product management system to automate the entire process of receiving, accounting and dispensing all petroleum products.

All software systems have been tested and are now successfully used by industrial customers.

According to the system, a count is kept of petroleum filling stations network. Drivers or vehicles are authorized on the non-operator vacation terminals using electronic identification cards or electronic keys.

The accounting system records the release and receipt of petroleum products, automatically measuring the level of petroleum products in the tanks, and calculates the volume and mass of stored petroleum products. Also, the presence of petroleum products at gas stations in the graphic environment is assessed.

The accounting of all oil products is integrated with the non-operational release terminals and a top-level system that provides the user access to the logs of all refuellings and to the reports, forms normative-reference information, registers identification keys or cards.

Non-Operational Terminals operate around the clock, they connect to the corporate network for the transmission of all data using the information of the top-level system.

Terminals are connected directly through the TCP / IP network of the enterprise or through a hardware / software gateway (via GSM, radio or satellite).
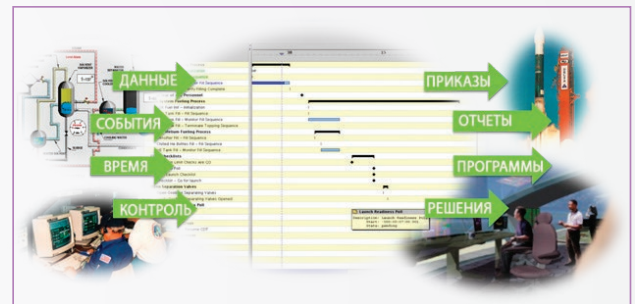
The accounting system excludes all turnover with cash during refueling of departmental transport, which allows accurate accounting of the release and receipt of petroleum products in the filling station, and creates a limit for the release of petroleum products to certain vehicles and drivers.

The accounting and maintenance system of gas appliances

This system provides great opportunities for automation and dispatching accounting of all types of industrial and municipal energy consumption in the scales of cities and regions.

The use of the system provides a high level of reliability of the gas volume measuring from the main gas pipeline to the final consumer at all levels of distribution and consumption as the basis for commercial calculations and balancing the "supply-consumption" of gas, as well as centralization and automation of data collection on consumption from all levels of the distributed complex And their automatic processing.

The system of collection and display of emergency and recovery teams on GIS maps.

Hydraulic calculation system on GIS maps.

GIS system of gas pipelines and associated facilities.

The purpose of the geographic information system (GIS) is to automate the process of collecting, storing, processing and issuing cartographic, graphic and textual information reflecting the current state of the main gas pipelines and associated facilities.

The system allows to solve the following tasks:

- ✔ review of the territory of the organization;
- ✔ obtaining operational characteristics of all elements of the gas pipeline system;
- ✔ solving the problems of delivery of machinery and equipment to the sections of the gas pipeline;
- ✔ finding data on in-pipe diagnostics of the location on the terrain of pipe defects;
- ✔ analysis of the state of the main pipelines for solving various engineering problems.

The use of open source software in 90% of cases leads to import substitution at the level of system software and hardware.

The system of accounting for natural gas consumers

The software complex provides reliable commercial accounting of natural gas consumption and includes:

✔ Subsystem of the account of physical persons.

✔ Subsystem for the registration of legal entities.

Liquefied gas consumers accounting system

The system is intended for use in the subscriber departments of gas facilities operating with liquefied gas.

The automation area of this system is:

✔ Maintenance of personal accounts and benefits of consumers of liquefied gas;

✔ Acceptance of applications from subscribers for the delivery of balloon gas and automatic generation of optimal delivery routes.
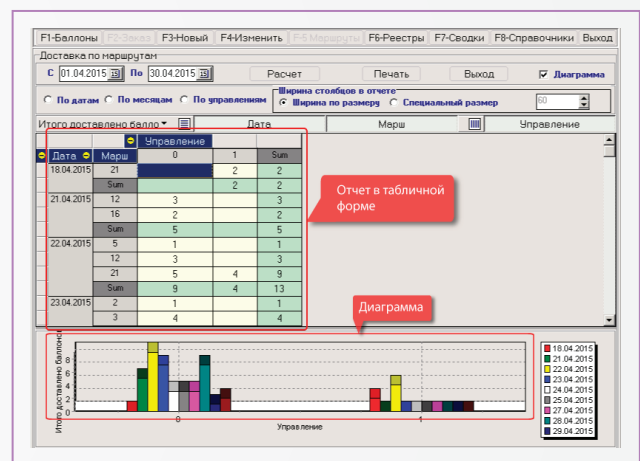
✔ Accounting for the cost of delivered cylinders.

✔ Subsystem of report generation.

✔ Register of orders for delivery routes, automatic generation of printed forms.

✔ Structured directories with the ability to edit information.

System of applications for the purchase of inventory items

The main purpose of the system is the organization and maintenance of a single database of commodity and material values, with the possibility of its integration and use in all major applications and software products of the company.

The system provides significant increase in the efficiency and reliability of the formation of the enterprise consolidated program of procurement through:

✔ collection and analysis of the needs of all branches of the enterprise in the purchase of goods and materials;

✔ planning the procurement schedule of the organization;

✔ centralized supply of the enterprise and branches.

The system of automatic data collection (ADC)

The system is designed for the household sector, to collect gas meters, water (hot, cold), heat, electricity.

The ADC system solves the following problems:

✔ Collection and transfer automation of information from energy meters to the data collection and storage server. Survey execution of a of meters according to a previously prepared schedule (it is possible to update the schedule without removing the instruments);

✔ Pprompt and reliable information obtaining on the consumed volumes of gas/water/heat, etc., and, consequently, achieving a balance between the supplier and the consumer;

*Our intelligent development uses the latest
data transmission standards*

- ✔ view counter readings from a mobile phone, application for the Android operating system;

- ✔ Data transmission over wireless communication channels (RF / GPRS / WI-FI / ZigBee);

- ✔ informing about the counterfeit situations of the meter (unauthorized impact on the meter, breakage of the pulse cable, exceeding the allowed consumption limits, signaling about leakage and reverse flow, etc.);

- ✔ reduction of staff costs for maintenance of metering devices;

- ✔ achieving transparency of access to the gas meter;

- ✔ automatic export of data to external energy accounting and billing systems;

- ✔ billing according to actual meter readings;

- ✔ reading and operation of archival data;

- ✔ monitoring of unauthorized gas withdrawal.

* It is possible to supply both modules for meters, and technical documentation and software.

Self-service and automatic information system for natural gas subscribers

The system consolidates management and access to information on the balance sheet, contractual relations, the timing of filing documents, the formation of invoices, receipt of payments, meter readings and application through the personal office of the web server of the enterprise, e-mail, text messages (sms).

Debt Distribution System

Debt is distributed over the periods of education with the subsequent formation of action documents.

 * There is the possibility of an integration system with the HaSS "Accounting for natural gas subscribers".

ARM systems:
- ✔ Emergency dispatchers of gas facilities.
- ✔ Central Dispatch Office.

Objects operations monitoring system

For the uninterrupted and trouble-free operation of modern industrial facilities, it is necessary to provide energy-saving automatic control and the fullest possible control over the operability of all components of the system.

It is necessary to have remote access to data. Our monitoring system allows us to solve this complex problem qualitatively.

Advantages of using the system:

✔ operational control of remote objects;

✔ automate the collection of information about the state of the object;

✔ rapid response to accidents and warning signals;

✔ optimization of the equipment through intelligent control algorithms;

✔ minimization of costs for the maintenance of the facility due to automation of management.

We offer several options for implementing this system.

✔ **Monitoring of boiler houses**

Automatic control, carried out with the help of universal controllers, changes the settings of the equipment of the heat point (HP).

Managed components of boiler houses are:

✔ boiler units;

✔ pumping stations;

✔ boilers (heat exchangers for hot water);

✔ valves (their work ensures compliance with the set temperature of the coolant temperature).

Remote access to the results of monitoring and energy-saving management is carried out with the help of GSM and / or Internet. A user who controls the process of providing heat on his PC "sees" the HP controller as one of the components of its local (home) network.

The system collects data and archives it on the resource. It is possible to use monitoring data of boiler equipment of one or several boiler houses.

You can always be aware of what is happening with your object. For this you need only access to the Internet.

✔ Monitoring of solar systems

Heliosystems allow the maximum use of solar radiation in hot water heating and house heating systems.

With our system you can at any time learn about the status of the solar system. Monitoring parameters will tell you about the problem before the coolant boils. This will allow to make a timely decision on the optimization of temperature conditions, eliminating the overheating of pumps and heat pipes.
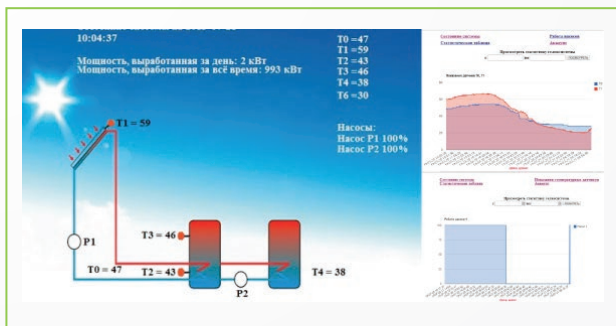

Each modem has its own unique password and login in our system. Entering the login and password of your modem, you can get exhaustive information about the status of your solar system:

✔ information on the operating modes of the solar system;

✔ display of work settings

✔ readings of temperature sensors;

✔ operation indication of pumps and relays.

✔ Monitoring of industrial buildings

To transfer data from remote objects, the following communication channels are used:

✔ Ethernet, wireless networks (WiFi, WiMAX)

✔ Cellular network: GPRS, 3G, GSM (SMS-mode)

✔ Satellite communication (VSAT, IRIDIUM)
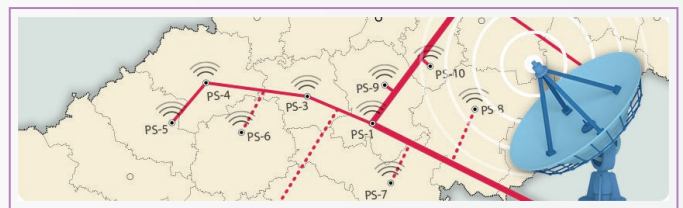
The system performs in real time:

✔ data collection from "smart" devices - electricity meters, power racks of base stations, ventilation system controllers, digital weather stations, diesel generators, etc.)

✔ collection of emergency and warning signals, fire alarm signals.

✔ monitoring of power quality, analysis and testing of batteries, temperature monitoring via digital temperature sensors, monitoring of the condition of circuit breakers.

BI system for analysis of natural gas consumption GTS

✔ analysis of data on consumption patterns and events;

✔ calculation of the actual change in the gas reserve;

✔ analysis of the actual balance of transport and distribution of gas;

✔ multi-criteria analysis of the actual operating mode of the gas transportation system.

BI Failure Analysis System

The system provides an opportunity to analyze the failures of gas equipment of natural gas subscribers, maintenance and the formation of reporting documentation.

 * There is a possibility of integration with the system of applications for repair of gas equipment.

The system of accounting and analysis of gas supplies through gas distribution points.

✔ Analysis of gas supplies to end users.

✔ Identification of gas losses and prompt notification of imbalances.

✔ Control of gas consumption at looped gas distribution points.

PRODUCTION OF ELECTRIC EQUIPMENT

The maximum reliability and durability of the manufactured devices are the main production priorities for our company.

Design and manufacture of high-precision electrical equipment

Our company has extensive experience in the design and manufacture of high-precision modern electrical equipment.

Our production principles:

✔ Production of world-class innovative products at affordable prices for a common consumer.

✔ Creation of a multidisciplinary network of service centers throughout the Russian Federation and the countries that are members of the Customs Union.

✔ Warranty and post-warranty service of the delivered devices.

✔ Creation of an extensive partner network in the territory of the CIS countries.

✔ Training of specialists in the field of operation of manufactured products.

The presence of a full cycle - from placing an order, developing to installation on the site, allows us to implement electrical projects of any complexity, taking into account the individual features of the order.

Voltage stabilizers "Rustechnology-System"

Our company produces voltage stabilizers of five series:

✔ voltage stabilizers **LUX**

✔ voltage stabilizers **START**

✔ voltage stabilizers **CLASSIC**

✔ voltage stabilizers **ULTRA**

✔ voltage stabilizers **ULTRA-M**

The high accuracy of our stabilizers ensures high-quality voltage for the most demanding equipment

VOLTAGE STABILIZER WITH TELEMETRY SYSTEM

The use of remote data reading, monitoring and remote management is particularly important in various industries, such as: energy, gas, water and health, where the introduction of new methods of reading parameters ensures the optimization of the entire distribution process and ways of working.

The models of 2016 acquired a **new modern design** and combined the latest developments of the leading specialists of our company.

The newest models of the **Ultra-M voltage stabilizers** are equipped with unique silent autotransformers with triple power reserve with the lowest possible, for this type of autotransformers, their own consumption.

Thanks to the i**nnovative technologies** used in the new equipment, it was possible to significantly expand the field of application of voltage stabilizers.

Due to the relatively **low cost and high quality** of the equipment, our development is increasingly gaining popularity and is in demand among private companies, enterprises and similar companies.
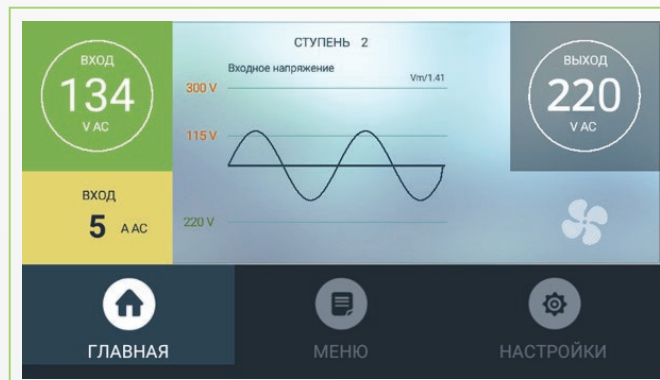
In the stabilizers, thermal protection is installed, which blocks the operation of devices when the permissible temperature limit of the elements is exceeded.

The introduction of **telemetry technology** into the stabilization system, which allows to transmit measured data at a distance, as well as providing the opportunity to work with mobile devices, smartphones on Android and iOS OS or with the devices developed by our specialists and supplied as an additional option (BBT-4 module), opens new possibilities For large industrial enterprises, wholesale and retail chains, telecommunication companies and healthcare institutions.
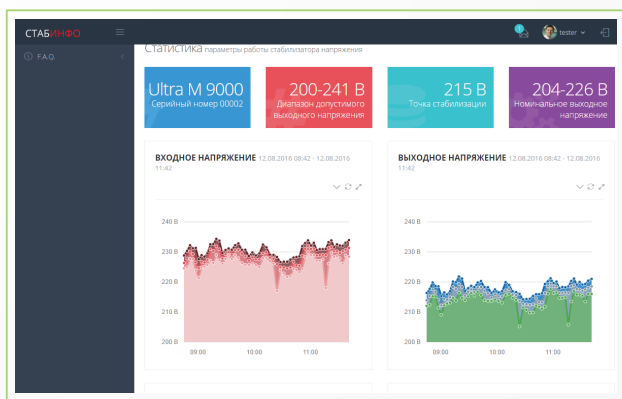
If necessary, with the help of our IT-center, it is possible to remotely adjust the device management algorithms for specific operating conditions, on the user's request.

The main advantages of the new series of stabilizers Ultra-M:

✔ Modern informative **touch screen.**

✔ **Remote reading** function.

✔ Remote control and visual monitoring of stabilization parameters is carried out via the **Web interface** from any device that has Internet access.

✔ Unique autotransformer with **triple power reserve.**

✔ **Automatic operation** in emergency situations.

✔ Short circuit protection.

✔ Protection against overload and pulse currents.

✔ The range of operating voltages **from 110 to 300 V.**

✔ Operation at ambient temperature from -10 to +40 C.

✔ The use of high-quality thyristors in the switching scheme of the windings of stabilizers allows the equipment to be launched with a peak current exceeding 70%.

Reliable partnership

The company "RusTechnology" is a developer and manufacturer of energy-efficient electrical equipment (intelligent telemetry blocks for domestic and industrial gas metering units), as well as carries out design and implementation of integrated monitoring and control systems for water and gas supply facilities.

We integrate new automated systems into the existing IT infrastructure of the enterprise, or develop solutions with existing software and hardware complexes.

Advantages of cooperation with our company are: well thought out system deployment technology, detailed instructions for the installation, setup and use of the software product, staff training and continuous monitoring of the implementation status of the system.

We are focused on long-term cooperation, actively invest in the development of new products and guarantee to our customers a quality after-sales service, including technical support and service.

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