



*Electronic
Information
Systems*

AUTOMATIC CONTROL SYSTEMS

2013

ABOUT COMPANY

HISTORY:

1992 Closed Joint Stock Company Scientific and Production Enterprise “Electronic Information Systems” (EIS) was founded on the basis of the Urals largest device-engineering association – Federal State Unitary Enterprise “Automatics” – leading Russian developer and producer of control systems and radioelectronic devices for rockets, as well as control systems to automate the processes in different industrial branches.

KEY FACTS:

- “Electronic Information Systems” (EIS) was founded in 1992
- More than 100 highly qualified employees
- The quality management system is certified according to ISO 9001:2008
- We have our own production facilities, design bureau, IT department

DIRECTIONS:

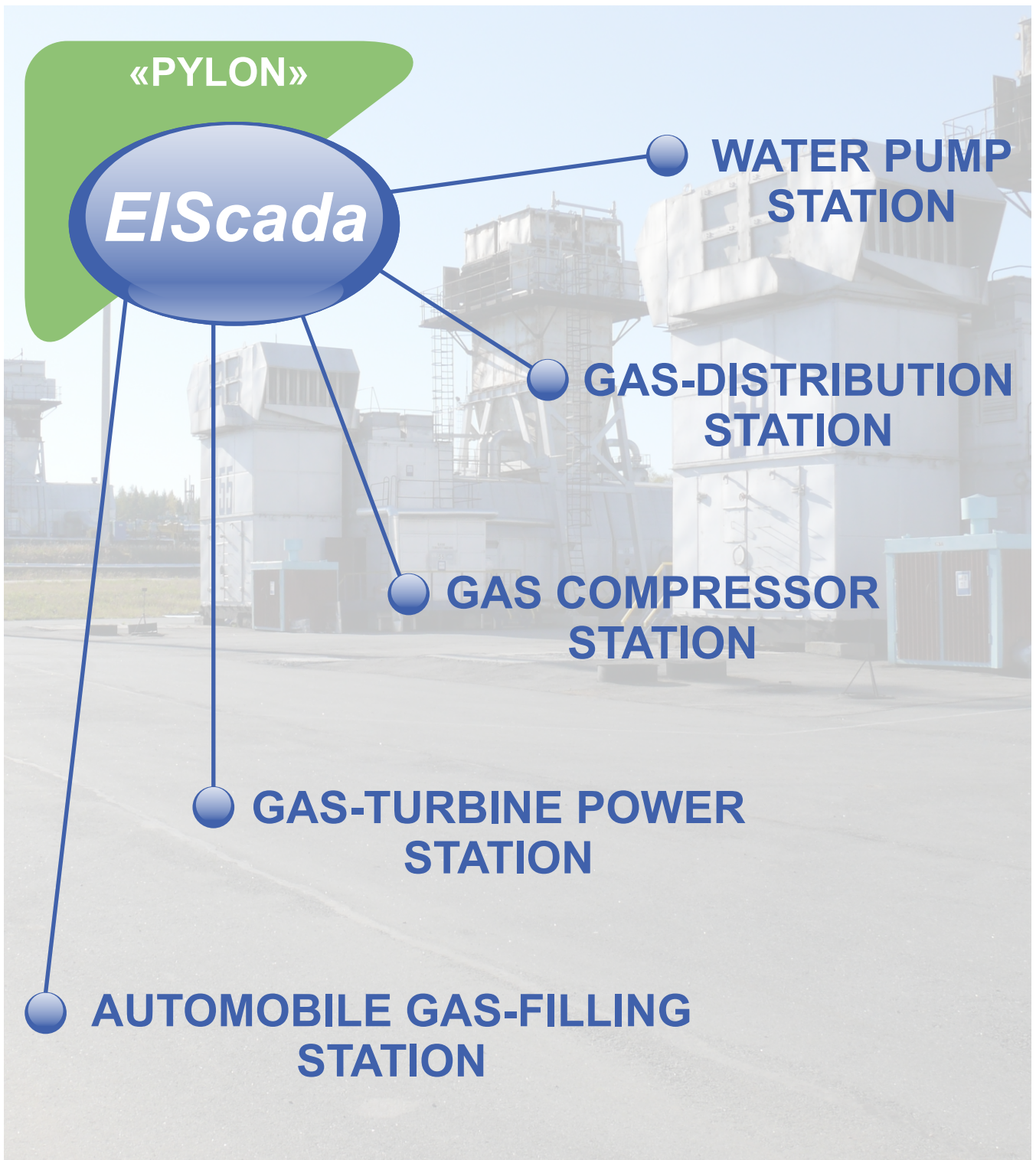
One of the main EIS' activities is development of SCADA and Data Acquisition Systems to monitor and control the technological processes in the following industries: power, oil and gas, chemicals, petrochemicals and metallurgy.

The company designs and manufactures a wide spectrum of devices for the monitoring and regulation of electric and non-electric values (temperature, pressure, flow rate etc), rating transducers, supply units, flame monitoring devices, and temperature sensors.

Moreover one of the key EIS' working directions is development and manufacture of the PLC equipment (line traps, tuning devices for line traps, coupling and decoupling devices), intended to transmit the telemetry signals through PLC lines.

BENEFITS:

- EIS has delivered more than 20 000 devices for OOO “Gazprom Transgaz Yugorsk” and OOO “Uraltransgaz” within repair – and – service projects.
- The automation systems at more than 200 gas stations OOO “Gazprom Transgaz Yugorsk” were updated using SW and HW solutions by EIS.
- Software and hardware are well proven during seven years of maintenance at potentially explosive objects.
- Our engineering and technology solutions are well proven, with a 20 year history of delivering fully integrated projects for our clients. We have a broad portfolio of customizable solutions, which includes Russian largest companies such as CJSC Gazprom, OAO FSK EES, OAO Holding MRSK. at potentially explosive objects.
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AUTOMATIC CONTROL SYSTEM FOR GAS-COMPRESSOR STATIONS (SAU GPA)

PURPOSE

The firmware facilities of automatic control system for gas-compressor stations comply with all international standards for dangerously explosive industrial objects, such as gas compressor stations.



MAIN FUNCTIONS

The SAU GPA implements the following solutions:

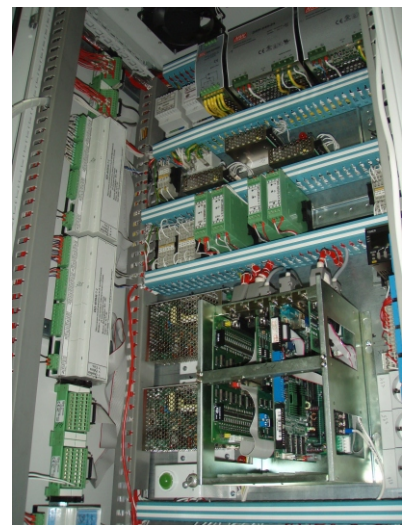
- Three-channel and two-channel standby
- Multi-window interface with GPA operator allowing for easy interpretation of data feeds and system-wide control
- Self-diagnoses to the approximation of one channel
- Integrated input-output modules on advanced micro-controllers
- Fault and failure tolerance supported by program

AUTOMATIC CONTROL SYSTEM FOR GAS-DISTRIBUTION STATION (SAU GRS)

ACS GDS is intended for the control and automation of one- or two-thread gas-distribution stations of different capacities.

MAIN TASKS TO BE SOLVED

- Execution of automatic control programs in emergency situations.
- Tap control
- Ability to query gas flow rate calculators via interface, calculation of summary gas flow rate and control of gas odor system.
- Data acquisition, processing and archiving.
- Automatic transmission of emergency and warning signals to the workstation operator and the recording of each emergency event.
- Change of warning and emergency setups from the built-in and remote operator workstation.
- Control of exhaust ventilation, emergency light and acoustic signaling.
- Good condition monitoring of all operating mechanisms of technological equipment, continuously runs self-diagnostics on all system modules and supply units.
- Displays information about process flows and the state of equipment graphically via the remote operator workstation.
- Integration with the protection signaling system.
- Integration with the fire signaling system.
- Interaction with remote control & monitoring system supporting the command transmission via communication line from the operator to control objects, and remote control devices in operator house.
- Data transmission to information-control systems via interface lines, telephone lines or radio channel.
- Provides uninterrupted electricity supply support of ACS GPA and automation devices in the event of voltage loss from an uninterrupted supply assembly with the use of a back up battery (from 2 to 8 hours).



SPECIFICATIONS

- 24 analog input signals TCM (RTD Copper), ТСП (RTD Platinum) thermal resistance transducers with calibrations under State Standart 6651; (0-5), (0-20), (4-20) mA direct current; direct voltage from ± 15 mV to 550 V; alternating voltage from 200 mV to 600 V; frequency signals from (0-500) Hz to (0-100) kHz; including signals from TCM (RTD Copper), ТСП (RTD Platinum) and pressure sensors with spark-proof input circuits of level "ia".
- 104 discrete low-voltage (24 V) input signals, including 24 differential and 5 groups with one common (of 16 signals "dry contact").
- Up to 16 low-frequency number-pulse (count) inputs with pulse-recurrence frequency up to 100 Hz.
- 32 output discrete signals (transistor with open collector = 30 V, 100 mA; electromechanical relays with commutating contact (~ 220 V or = 30 V, 6 A) or optorelays (~ 220 V, 2 A or = 24 V, 2 A).
- Up to 4 analog output signals (0-20), (4-20) mA or (0-10), (0-5) V.
- Cycle of inquiry and control under discrete signals – 100 ms (under analog signals – 1 s).



INSTALLED EQUIPMENT SPECIFICATIONS

1. ACS GDS cabinet with built-in panel operator workstation: 2200 x 600 x 400 mm (H x W x D).
2. Remote operator workstation: industrial desktop computer: system unit, keyboard, mouse, acoustic columns – at client's request.
3. ABP1300-OO-24/220 (ABP - Uninterruptible power supply) uninterrupted supply assembly - 440 x 530 x 500 mm (H x W x D) – at client's request.
4. 2 pieces of AKB DJM 12200 (12 V, 200 A*h) – 224 x 522 x 240 mm (H x W x D) – at client's request. (AKB- storage battery)
5. ABP & AKB case-support – 300 x 540 x 500 mm (H x W x D) – at client's request.



AUTOMATIC CONTROL SYSTEM FOR GAS-DISTRIBUTION STATION (MINI SAU GRS)

ACS GDS is intended for the control and automation of one- or two-thread gas-distribution stations of different capacities.

MAIN FUNCTIONS

1. Control Modes:

- Fully automatic control
- Remote manual and remote automatic control of operating mechanisms from the operator workstation built in to the ACS cabinet.

2. Main Tasks to Be Solved:

- Execution of automatic control programs in emergency situations.
- Tap control
- Ability to query gas flow rate calculators via interface, calculation of summary gas flow rate and control of gas odor system.
- Data acquisition, processing and archiving.
- Automatic transmission of emergency and warning signals to the workstation operator and the recording of each emergency event.
- Change of warning and emergency setups from the built-in and remote operator workstation.
- Control of exhaust ventilation, emergency light and acoustic signaling.
- Good condition monitoring of all operating mechanisms of technological equipment, continuously runs self-diagnostics on all system modules and supply units.
- Displays information about process flows and the state of equipment graphically via the remote operator workstation.
- Integration with the protection signaling system.
- Integration with the fire signaling system.
- Interaction with teleautomatics and remote control systems in operator house.
- Data transmission to the upper level of the information-control systems via interface lines, telephone lines or radio channel.
- Provides uninterrupted power supply support of ACS GPA and automation devices in case of voltage loss from an uninterrupted supply assembly with the use of accumulator batteries with large capacity during a long time (from 24 to 48 hours).



SPECIFICATIONS

- up to 24 analog input signals TCM (RTD Copper), ТСП (RTD Platinum) thermal resistance transducers with calibrations under State Standart 6651; (0-5), (0-20), (4-20) mA direct current; direct voltage from ± 15 mV to 550 V; alternating voltage from 200 mV to 600 V; frequency signals from (0-500) Hz to (0-100) kHz; including signals from TCM (RTD Copper), ТСП (RTD Platinum) and pressure sensors with spark-proof input circuits of level "ia" under State Standart R 51330.10-99
- up to 72 discrete low-voltage (24 V) input signals, including 24 differential and 4 groups with one common (of 16 signals "dry contact"); including spark-proof input circuits of level "ib" under State Standart R 51330.10-99
- up to 16 low-frequency number-pulse (count) inputs with pulse-recurrence frequency up to 25 Hz
- up to 28 output discrete signals (transistor with open collector = 30 V, 100 mA; electromechanical relays with commutating contact (~ 220 V or = 30 V, 6 A) or optorelays (~ 220 V, 2 A or = 24 V, 2 A)
- up to 2 impulse output signals (impulse of specified length given in accordance with the algorithm of control)
- up to 2 analog output signals (0-20), (4-20) mA or (0-10), (0-5) V
- cycle of inquiry and control under discrete signals – 100 ms (under analog signals – 1 s)
- built in operator workstation with color touch screen display, the diagonal size is 7" (17,8cm)
- storage of archives on the USB Flash Drive with capacity of 8 GB doesn't exceed 30 days
- power input is no more than 100 W
- production of a small-sized wall-hanging cabinet for the installation on the wall is possible

CONSTITUTION AND CONSTRUCTION

- ACS GDS cabinet: 2000 x 600 x 400 mm (H x W x D) or ACS GDS wall hanging cabinet: 1400 x 800 x 300 mm (H x W x D) - at client's request
- АБП 00-700-220/24 (АБП - Uninterruptible power supply) uninterrupted supply assembly (700 W, with double conversion) - 800 x 650 x 250 mm (H x W x D) – at client's request
- 2 pieces of АКБ DJM 12200 (12 V, 200 A*h) – 224 x 522 x 240 mm (H x W x D) – at client's request. (АКБ- storage battery)
- АБП & АКБ case-support – 1050 x 600 x 600 mm (H x W x D) – at client's request.

REMOTE SOFTWARE TO CONTROL PUMPS AT WATER INTAKE (SDU NV)

DESCRIPTION

Remote software is used to control pumps at water intake and to manage the parameters and states of the water intakes. It is versatile and could be modified to automate any object, which is supplied by high-voltage lines with voltage not less than 6.3 kV. The section of high-voltage lines (6.3-750kV) in the same direction could also be used. Software guarantees the safe maintenance in case of any faults in communication channel (e.g. noise, fading). The current state of the equipment is stored at complete breakdown.

CONTROLLED PARAMETERS

- Water level in tanks;
- Availability of power supply in water wells;
- State of pumps, located in the water wells (on/off);
- Air temperature in the entry section of the container;
- Air temperature in the working section of the container;
- Water temperature;
- Water pressure;
- Water level in the water well;
- State of heaters in the entry section and working area of the containers (on/off);
- State of water well heater (on/off);
- State of the conditioner (on/off);
- Container door state (open/close);
- Intrusion within well perimeter.



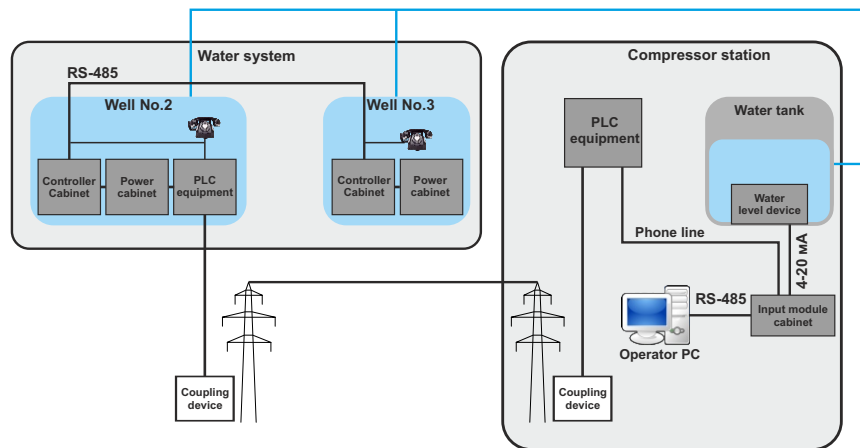
SOFTWARE ENABLES TO CONTROL

- Different modes of pumps, located in the water wells (on/off);
- Anti-icing heaters in the entry section and working area of the containers at the water well (on/off);
- Water well heaters (on/off).

REMOTE CONTROL SYSTEM INCLUDES

- Operator panel;
- Communication via power line;
- Communication devices with controlled entities;
- Multichannel: e.g. ability to transfer digital data and to transfer voice data.

NUMBER AND TYPE OF THE CONTROLLED PARAMETERS AND CONTROL SIGNALS ARE CUSTOMIZABLE



AUTOMATIC CONTROL SYSTEM FOR GAS-TURBINE POWER STATION (SAU GRS)

PURPOSE

SAU GRS is used in automated gas-turbine power stations operating without regular maintenance under the conditions of use of automatic control systems for technological processes.

SAU GRS is intended for the automation and control of gas-turbine power stations (GTPS-4), 4.0 MW, as well as for:

- Supporting interaction with higher-level ACS TP for the optimization and coordination of GTPS load control under normal and emergency conditions.
- Formation and storage of required report documentation and its transmission to higher-level ACS TP.

SAU GRS can work both on a single, stand-alone gas turbine or may be incorporated into a network of similar gas turbines managed by a single control system.

OPERATING CONDITIONS

SAU GRS supports technological control process automation under the following conditions of operation:

- Cold reserve
- Hot reserve
- Cold scrolling
- Routine operations
- Normal stop
- Emergency stop
- Remote control
- Emergency stop by signal "Fire"
- Start to parallel operation with automatic control network
- Start to parallel operation with automated control network
- Start to autonomous operation with automatic control
- Start to autonomous operation with automated control
- Operating



MAIN FUNCTIONS

SAU GRS supports the execution of the following monitoring and display functions:

- Continuous monitoring of technological parameters, including the measuring and indication of selected parameter values in physical magnitude units under State Standard 8.417-81, with parameter sign indication.
- Instant visualization of desired monitoring units in user-defined formats (tabular or graphical) identifying areas of warning, emergencies, and other operating parameters.
- Automatic monitoring of the parameters common to all stations – concentration of methane and heat spots, general temperature, humidity, and external air pressure.
- Automatic equipment diagnostics.
- Solving calculated tasks.
- Measuring electricity usage.
- Counting the number of starts.
- Automatic detection and display of deviations from specified parameters.
- Display of information concerning the non-execution of the pre-start conditions.
- Signaling main assembly regimes
- Storing and documentation of all operational parameters relating to an emergency stop. Data will be automatically recorded from 100 seconds before to 200 seconds after an emergency stop is executed.



SPECIFICATIONS

1. SAU GRS supports reception and conversion of the following input information with taking account of reserve from:

- TXA (chromel-alumel thermoelectric converter), temperature sensors – up to 72.
- Sensors with rated output, (4-20) mA – up to 27.
- Sensors with rated output, (0-5) mA – up to 18.
- Discrete signal sensors – up to 256.
- Frequency signals from rotational rate sensors of ДЧВ-2500 type – no less than 2.
- Frequency signals from energy meters of CA3Y-4670Д type – no less than 2.

2. SAU GRS supports 156 output control commands.

3. From the point of hardware view, SAU GRS is built based on industrial computers, as well as data acquisition and control devices of 7000 & 8000 series of ISP DAS firm.

4. According to physical design specifications, SAU GRS is delivered installed in a RITTAL cabinet with the dimensions 800x600x2000 mm.

SAU GRS differs from similar systems due to its high level of complex control and monitoring automation of power stations. It has a higher level of reliability and vitality owing to that it allows the turbine to remain on standby, as well as to its user-friendly software and its capability of quick adaptation to varying conditions.

AUTOMATIC CONTROL SYSTEM FOR AUTOMOBILE GAS-FILLING STATION (SAU AGNKS)

SAU AGNKS is designed for monitoring, control and emergency protection of MBCE-250 (modular block-container execution) AGFCS stations in all modes of operation. It also performs compressor state diagnoses, measuring the quantity of gasoline delivered into the station's reserve tanks and the quantity of gas filled in customer's automobiles.

SAU AGNKS are used at automobile gas-filling compressor stations in modular or block-container execution instead of obsolete and often technically used up automation of home production. The measuring devices come installed in a black box and can only measure up to 250 instances of re-fuelling per day.

- For MBCE-250 AGFCS: A705-15-01MA microprocessor system.
- For BCE-250 AGFCS: relay control system.

BENEFITS OF IMPLEMENTING AN SAU AGNKS

- Reduces expenses for routine automation maintenance and automation repair in case of failures
- Increases AGFCS operation safety due to oportune maintenance and repair
- Decreases the probability of false stops.
- Reduces personnel expenses in case of use of workstations for cashier-filler and compressor machinist on a single PC.
- Automates AGFCS reporting.

MAIN SAU AGNKS FUNCTIONS

- Controls compressor installations and their auxiliary mechanisms, AGFCS operating mechanisms, gas-drying unit and fire automation systems according to specified metrics.
- Automatic AGFCS protection by technological parameter values, including fire-prevention measures and excessive gas pollution elimination measures.
- Provides a graphical or tabular interface for the visualization of desired metrics and emergency notifications on a PC-based workstation.
- Continuous diagnostic monitoring all channels of ACS measurement and control.
- Maintaining archives of historical data, including gas flow rate on "input" and when fuelling.
- Allows the granting of system access rights subject to user category.
- Formation of both electronic and printed reports.

SAU AGNKS CONSTITUTION

- ACS is intended for the control of AGFCS devices common to all gas stations (slides, pumps, ventilators, fire-extinguishing system) and operating mechanisms of gas-drying unit.
- Compressor ACS is intended for the control of compressors used for gas compression on AGFCS.

The SAU AGNKS complex is built with use both of own firmware facilities and equipment of leading world firms. Controllers being firmware basis for each SAU AGNKS subsystem are based on devices produced by ICP DAS, Atmel, Advantech companies, as well as modules of own development.

The division of the AGFCS subsystem control functions between control units allows the user to:

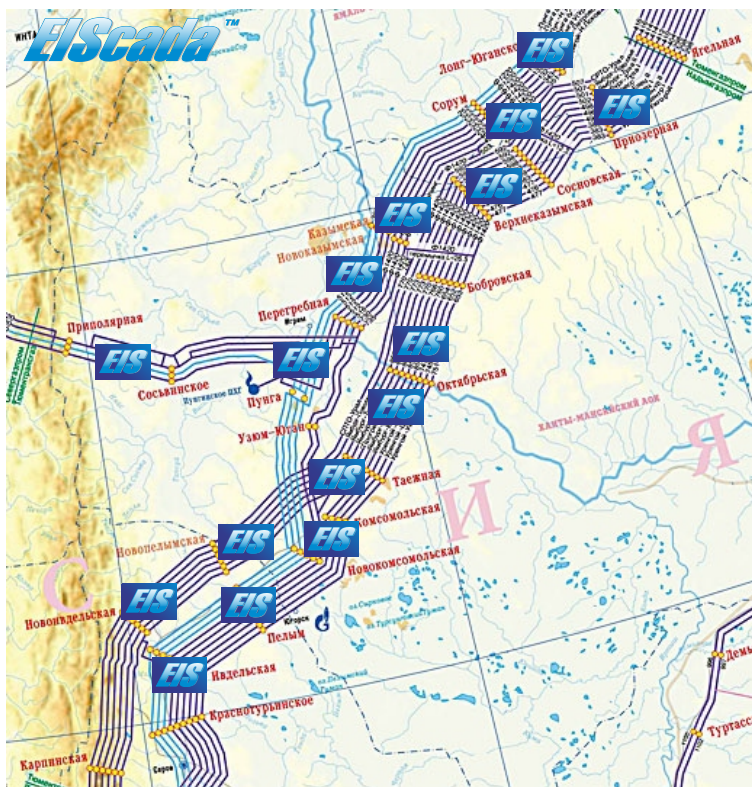
- Increase the safety of the ACS system as a whole.
- Simplifies system implementation and provides the ability to update AGFCS with less than twenty-four hour down times.

Workstation of SAU AGNKS operator represents a PC with SCADA-system of own design installed on it (CuteSCADA software).

ADVANTAGES OF SAU AGNKS OF DESIGN AND PRODUCTION OF CSC “EIS”

- Ease of Integration: SAU AGNKS was designed to have the capability to interface with non-standard (individual or obsolete) calibration sensors.
- Flexibility: SAU AGNKS is able to increase the number of input and output signals, as well as interface with automated control systems of workshop level and higher, and third party systems.
- Ease of Use: Designed with the user in mind with a customizable user interface.





Программный комплекс EIScada

построен по принципам модульности, масштабируемости, многоплатформенности и эффективности.

Компоненты EIScada были установлены более чем на 200 объектах автоматизации, а сроки разработки информационно-измерительных систем не превышали трех месяцев.

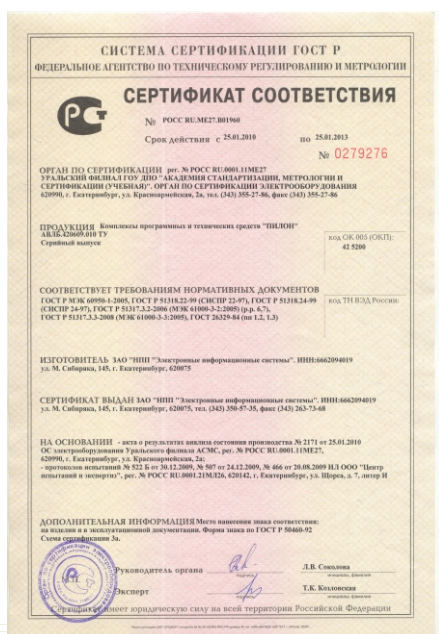
В течение последних пяти лет компоненты EIScada доказали свою надежность, устойчивость и удобство пользования.

CERTIFICATES

Software-hardware complex "Pylon" is produced, based on the Russian general technical specifications AVLB.420609.010TU.

The following certificated were given to "Pylon":

- Certificate on the type of measuring device of the SW/HW complexes "Pylon" RU.C.34.005.A No. 36925 given by the Federal Agency on technical monitoring and metrology;
- Certificate on state registration of SW for PC No. 2010615064 "Software for complexes "Pylon";
- Certificate GOST R describing that Pylon meets the requirements on industrial safety. ROSS RU.ME27.B01960 No.0279276;
- Permission from Rostekhnadzor (Federal Service for Ecological, Technological and Atomic Supervision) allowing use of SW-HW systems "Pylon" at dangerous industrial objects, No. RRS 00-043468.



About company **2**

AUTOMATIC CONTROL SYSTEM FOR GAS-COMPRESSOR STATIONS

SAU GPA **7**

SAU GRS **7**

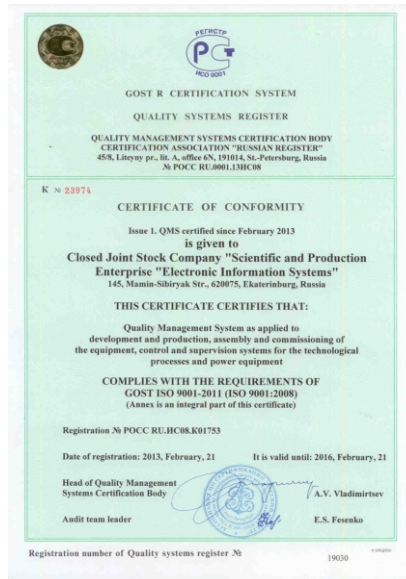
MINI SAU GRS **9**

SDU NV **11**

SAU AGNKS **12**

CERTIFICATES **22**

CERTIFICATES CJSC «EIS»





Electronic Information Systems

CJSC «Scientific and Production Enterprise
«Electronic Information Systems»

620075, Ekaterinburg

ул. Мамина-Сибiryaka str. 145

phone: +7 (343) 350-57-35

fax: +7 (343) 263-74-80

main@eisystem.ru

www.eisystem.ru