

**OPEN JOINT STOCK COMPANY  
“AGAT – CONTROL SYSTEMS” –  
MANAGING COMPANY OF “GEOINFORMATION  
CONTROL SYSTEMS” HOLDING**



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The Holding combines the complete cycle of work – from development to serial production.

The Quality system of organizations of the Holding has been certified to meet STB ISO 9001-2009 requirements.

“Geoinformation Control Systems” Holding is one of the largest companies of the STATE MILITARY and INDUSTRIAL COMMITTEE of the Republic of Belarus.

Holding’s structure includes organizations which have their own long-standing history and specialization, unique technologies and developments.

The high technologies developed for weapon systems find use in making innovation products of national economy.

OJSC “AGAT – Control Systems” – Managing Company of “Geoinformation Control Systems” Holding is an organization of diverse activities, one of the leading companies of the country dealing with general and special purpose automated control systems, unmanned aircraft and robotics complexes, video surveillance, navigation and transport monitoring systems, hardware-software complexes and equipment, test instruments.



- **MILITARY-ORIENTED GOODS, WORKS AND SERVICES**
- **AIR AND LAND ROBOTIC PLATFORMS**
- **DUAL-PURPOSE GOODS**
- **INDUSTRIAL AND TECHNICAL GOODS**





- Air Force and Air Defense automated control systems
- Automated control systems for ground forces, including tactical level systems
- Upgrade of systems and complexes
- Technologies
- Communication systems and data transmission equipment
- Hardware for special-purpose power supply systems integration



## UNMANNED AERIAL SYSTEMS



**“Grif-1E”**



**“Berkut-1E”**



**“Berkut-2E”**

The unmanned aerial systems are used for equipping tactical units of land forces to solve tasks on optical and electronic terrain reconnaissance in all weather conditions and at day and night time, assigning targets to fire units.

The unmanned aerial systems may be used for commercial application (oil and gas sectors, power engineering, etc.) .

## “ROBOT-A1” MOBILE ROBOTIC SYSTEM



The mobile robotic system is designed to perform visual and audio-visual reconnaissance, pioneering and engineering tasks, as well as to detect adverse factors in the environment (such as chemicals and radiation), and deliver cargo of diverse forms, sizes and application.

## BK402-SERIES ONBOARD COMPUTER



### APPLICATION

The BK402-series computer is designed for use both in stationary premises and in enclosed bodies on wheeled and tracked vehicles (including operation on the move).

### FUNCTIONS

The BK402-series computer performs computing and control functions and provides data input-output, storage, processing and display. It can be used:

- as a central computer;
- as a computer workstation, when provided with a video monitor, a keyboard and a mouse.

### COMPONENTS

- BK402-series computer;
- Peripheral equipment (option), including video monitors, a keyboard and a mouse.



- Energy-saving system solutions and technologies, equipment of domestic manufacture for energy and production facilities
- Automated control systems for urban and railway transport, air traffic and highway traffic
- Simulation complexes for different purposes
- Integrated automated information systems for state and government authorities
- Goods and services in information security sphere
- Security and video surveillance systems
- Informational and methodical support of Unified navigation and temporal support system of Republic of Belarus, providing services in the sphere of navigation activity





Totally the Company employs over 1000 staff.

Main production departments of Company:

- Special design departments;
- Pilot production.

Dozens of simulation centers have been established in the Company, which are equipped with the most modern computer equipment using advanced information and communication technologies both of domestic and foreign designs.

The automated system of end-to-end design and technological development has been introduced.



Authorized partnership with the right to sell goods and services in Republic of Belarus.

Acquiring specialization.

Access to companies' goods for development.

Using capabilities of world partnership network to promote Company's developments.

Providing services in product licensing and its technical support.



The Company has its own well-equipped production and test facilities, and provides the complete cycle of products development – from conceptual design to small-scale production.

Pilot production is equipped with modern technological facilities and provides prototype manufacture and small-scale production.

More than forty standard procedures for production and assembly of circuit boards, machining process, welding fabrication, electroplating, painting, pressing and assembly production have been developed.



Systematic upgrade of pilot production sites is conducted to increase the volume of manufactured goods, adoption of new product types and mastering and implementing new perspective technologies into production.

The multiple-access center has been founded within the Holding to render services in production using own high-technology equipment.





The Company has obtained certificates and licenses needed to provide products, works and services for defense sector, transportation sector, energy sector and other, as well as own production certificates.

The company performs its activities according to more than 10 000 national and international normative documents.

Quality management system has been certified to meet STB ISO 9001-2009 requirements.

The Company's products are made in compliance with global technical development trends and contain patentable advanced engineering, software and design solutions.

Currently the Company owns patents and certificates of inventions, useful models, designs, trademarks and computer programs of Belarus, the Russian Federation, and Eurasian Patent Office.



Today among the Company's customers there are countries with high development level of industrial and military technologies:  
CIS states (Russian Federation, Republic of Kazakhstan, Azerbaijan), Africa, Asian region, Arab countries and the EU.





-  Cisco Systems
-  Oracle
-  Alstom Grid
-  OJSC "Prosoft Systems"
-  Schneider Electric
-  Belarusian Railways
-  "Ukrspetstechnika" Holding Company (Ukraine)
-  Radio Engineering Corporation "VEGA" (Russia)
-  ComplIT Technologies (Belarus)
-  Belarusian State University of Information Sciences and Radioelectronics

-  THALES
-  IBA
-  OJSC "Bel Huawei Technologies"
-  Concern "ALGA" (Lithuania)
-  CJSC "NPP BELSOFT" (Belarus)
-  "Belenergo" State Production Association (Belarus)
-  CJSC "Mikran" (Russia)
-  CJSC "Avest" (Belarus)
-  State Academic Institution "Joint Institute of Information Science Issues of Belarusian National Academy of Sciences"
-  Belarusian State University

-  CJSC "Kaspersky Lab"
-  CJSC "Sigma Telas" (Lithuania)
-  "Sozvezdiye" Concern (Russia)
-  OJSC "SoftClub" (Belarus)
-  RUE "Belaeronavigation" (Belarus)
-  JCS "KazGIS Center" (Kazakhstan)
-  UE "SoftLine" (Belarus)



# AUTOMATION IN THE TRANSPORT SECTOR



## AUTOMATED ROAD TRAFFIC CONTROL SYSTEM (ARTCS) “AGAT”



**The system is implemented in:  
the following cities of the Republic of  
Belarus:**

- Minsk
- Baranovichi
- Grodno

**the following cities of the Russian Federation:**

- Novosibirsk
- Kaliningrad

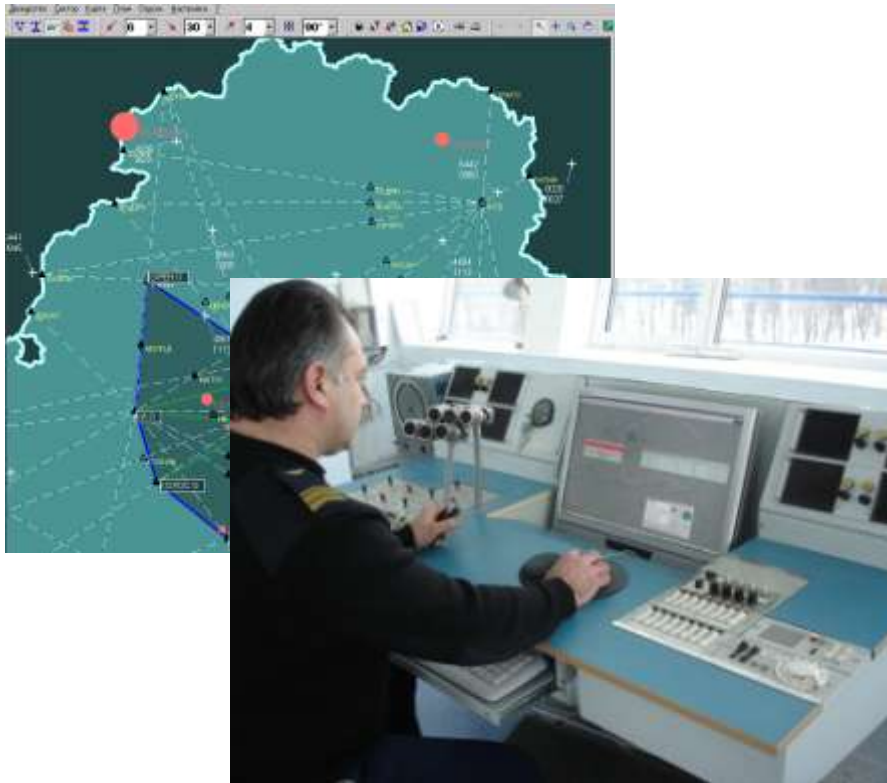
**Also, design works in the sphere of road  
traffic are accomplished in different towns.**

**ARTCS “Agat” is a road traffic control system of a new generation, designed to provide flexible control of road and foot traffic in cities and towns.**

**ARTCS “Agat” provides:**

- increase in efficiency of road network using;
- minimization of traffic delay at crossroads (by 20 – 25%);
- minimization of consumption of fuel and lubrication materials (by 5 – 15%);
- air pollution countermeasures (CO, hydrocarbons, nitrogen oxides and other pollutants emissions cutting by 5 – 10%);
- road safety improvement;
- driving time improvement by 10–15%;
- video surveillance in the places of the heaviest traffic flow.

## AUTOMATION EQUIPMENT COMPLEX FOR AIR TRAFFIC MANAGEMENT AT AERODROME (AEC ATM)



AEC ATM are implemented in airport control towers in Belarus regional centers.

### PURPOSE:

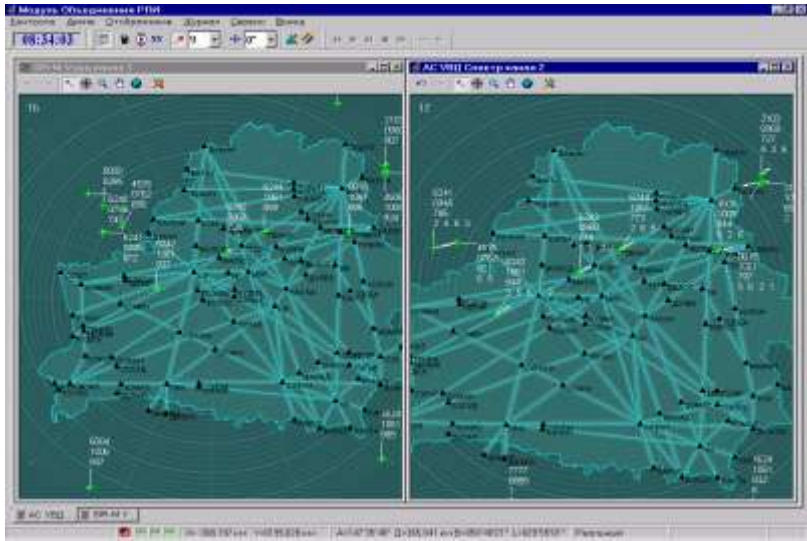
Automation of air traffic management in LCO, approach, circle, takeoff and taxiing aerodrome areas.

The following information is displayed on work stations of air traffic control towers:

- radar data
- bearings
- weather information
- plan
- cartographic data
- air navigation data
- reference information



## RADAR DATA ASSOCIATION MODULE



### PURPOSE:

Association of radar data received from different sources, generation of information on generalized air situation of FIR area of responsibility and home aerodrome, as well as its delivery to various users in order to ensure secure air traffic control and management.



## RADIO NAVIGATION FACILITIES VOR/DME



VOR/DME radio beacon, produced in cooperation with Thales ATM GmbH, is a radio navigation means, recommended by the International Civil Aviation Organization (ICAO) as an international navigation system for aircraft control on short and mean distance flights.

**Structure:**

- omnidirectional azimuthal radio beacon of VHF range CVOR 431;
- distance measuring equipment DME 435;
- remote control and monitoring system RCSE.

## AUTOMATED STATION CONTROL SYSTEM



**The system is in industrial operation at marshaling yards:**

- in Belarus
- in Latvia
- in Lithuania

**The system is designed for automation of the following technological processes:**

- car handling at marshaling yards;
- development of dynamic information model of the station's present state;
- organization of handling "local" cars;
- record and analysis of work accomplished;
- keeping the station archive;
- solutions of reports problems.

## UNDERGROUND MOTORMAN'S SIMULATOR



### The simulator is designed for:

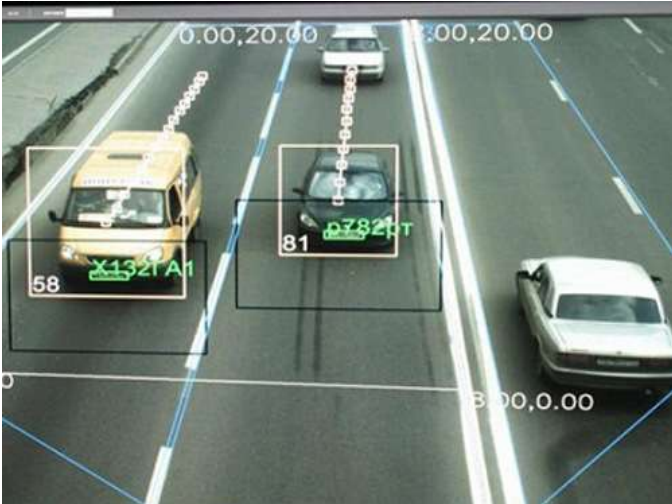
- Basic training;
- Motorman's qualification tests;
- Assessment of motorman's response and actions accuracy in emergency situations.

The simulator makes it possible for a motorman to perform train management in a simulated reality conditions.

### The simulator is in operation at:

- in Minsk ("Moskovskoe" depot, "Mogilevskoe" depot)
- in Kiev
- in Baku
- in Moscow

## INNOVATIVE GOODS



New technologies to control municipal public transport: systems providing prioritized passage of passenger transport and video-detecting of transportation streams of road traffic ACS.



Monitoring and control systems for mining trucks equipment.



## PROVIDING SERVICES IN THE SPHERE OF NAVIGATION ACTIVITY



- Supply, installation on transport means and adjustment of navigation terminals and fuel level sensors;
- Supply, adjustment and connecting personal trackers to the monitoring system of navigation and information center;
- Connecting transport means, equipped with navigation terminals, to the monitoring system of navigation and information center.

# AUTOMATION SOLUTIONS FOR POWER ENGINEERING





Reconstruction and implementation of control, protection and management systems (“AGAT-2000” CPMS) with integrated functions of technical and commercial electric energy metering:

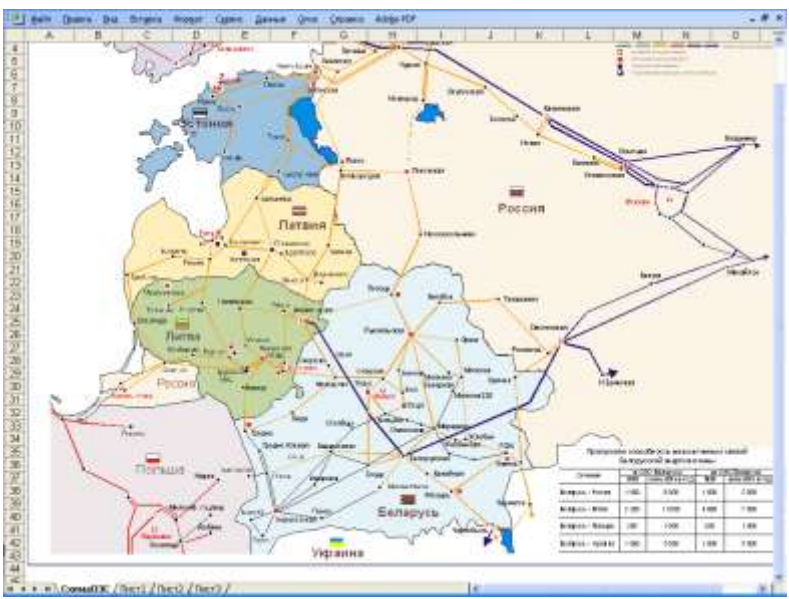
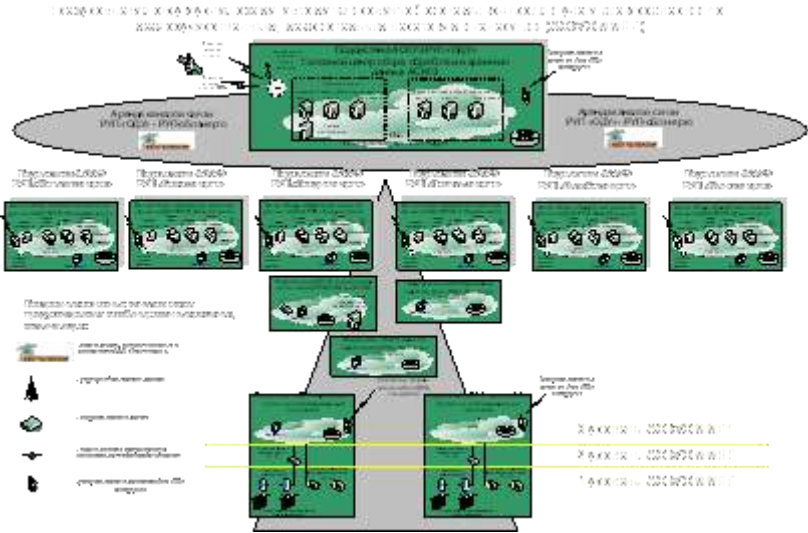
**110 kV substations:** Sukharevo, Lynkovskaya, Pleschinitzy (in the Minsk region); Krivoi Kryuk, Lupolovo (in the Mogilev region); Vitebsk-Severnaya (in the Vitebsk region);



Equipment was supplied for rehabilitation of the Nemiga, Libknekht and Altant (“Shabany” industrial area) substations in Minsk;

**330 kV substations:** Molodechno-330, Kolyadichi (in the Minsk region); Vitebskaya, Orsha-330 (in the Vitebsk region); Grodno, Ross-330 (in the Grodno region); Baranovichi-330 (in the Brest region); Miradino (the Mogilev region), Krichev-330.





## ACMS of the Power Industry:

ACMS of Interstate and Intersystem Energy Flows and Generation of the Republic of Belarus (includes about 30 power stations and over 200 substations).

## ACMS of industrial enterprises:

OJSC «AGAT – Control Systems» - Managing Company of Geoinformation Control Systems Holding”, OJSC Mogilev Rayon Factory, OJCS BelFA, OJCS Baranovichi Automated Lines Plant, OJCS Minsk Motor Plant, OJCS Bereza Feed-Milling Plant, OJSC Skidel Sugar Refinery.

## Automated systems for control and technical metering of electric energy of industrial enterprises:

OJSC Belarusian Metallurgical Works, OJSC Rechitsa Hardware Plant.

## ASCTM of CJSC “Aquabel - exhibition centre”

ACMS of telecoms operators: Mobile Digital Networks, BeST, Velcom.



## SOFTWARE FOR “AGAT- 2000” TECHNOLOGICAL PROCESS AUTOMATED CONTROL SYSTEM (“AGAT-2000” TP ACS)



Software for “AGAT- 2000” TP ACS is used to provide the most complete application of potential capabilities to transform and distribute the electric energy, to increase reliability in supplying customers with electric power, most effective, safe and economical usage of main equipment of energy power facilities.

### Performs:

- CPMS tasks for substations (SB) of 330/110/10 kW class, which represent the lower level of energy system hierarchy;
- ADMAS tasks for upper energy system levels (district electrical network (DEN), enterprises of electrical network (EEN), etc );
- AECMS tasks for different energy system levels.

## CENTER FOR COLLECTION, STORAGE AND PROCESSING OF DATA (CCDP) “AGAT ENERGO”



CCDP “AGAT Energo” performs the following tasks:

- accumulation, processing and analysis of all the data received from the accounting devices;
- possibility of technical and/or commercial accounting not only of electricity, but also other types of resources (gas, heat, water) both for industrial and domestic consumers;
- day-and-night access to object energy consumption data, data on the completeness of acquired information and technical condition of the accounting equipment.

The major subscriber of “AGAT Energo” CCDP is OJC “Aquabel Exhibition Center” with 150 metering points currently connected to the system and 100 metering points to be connected.

## AUTOMATIC FREQUENCY AND ACTIVE POWER REGULATION SYSTEM (AFAPRS)



### The system is designed for:

- frequency maintenance in power pool systems and isolated energy systems in normal conditions, according to National Standards concerning the electric energy quality;
- control over power pool exchange powers and limitation of power flows on controlled external and internal connections of power pool systems and isolated energy systems;
- power distribution (including economic distribution) between control objects at all dispatch management levels (between power plants in energy systems or between assemblies or power units within electric power plants).

## RELAY PROTECTION AND AUTOMATION



Complex of automatic devices designed for rapid (in case of damages) detection and disconnecting faulty elements from the electric energy system in emergencies to provide faultless operation of the entire system.



## NEW ACTIVITIES

### AUTOMATED INFORMATION AND METERING SYSTEM OF COMMERCIAL ELECTRIC ENERGY METERING FOR BELARUSIAN NUCLEAR POWER PLANT



OJSC “AGAT – Control System” won the bidding for equipment supply for Automated Information and Metering System of Commercial Energy Metering (AIMS CEM) for Belarusian Power Plant.

According to the basic technical requirements the system will integrate 36 electric energy metering points, including metering points of electric energy generated in 1<sup>st</sup> and 2<sup>nd</sup> units and flows over 7 high-voltage lines (330 kV).

## NEW ACTIVITIES

## EQUIPMENT FOR NUCLEAR POWER PLANTS



JSC “AGAT- control systems” is included into the “Unified Special Component Catalogue of Equipment and Materials for Nuclear Power Plants” of nuclear machine-building enterprises from Russia and foreign states.

The catalogue product range includes home-produced equipment: instrumentation and measuring devices, devices for collection, temporal storage, processing and data transfer, electrical machinery.

## NEW ACTIVITIES

## ENERGY SUPPLY MANAGEMENT OF HOUSING AND PUBLIC UTILITIES



The project for development of the automated energy control and metering system for housing and public utilities includes the following directions:

- Automated readout of energy consumption indices of the selected items (regions) and the installed equipment;
- Automated calculation of electric bills for consumers and integration with the billing system;
- Improved accuracy of planning, metering and control of the power grid energy resources and assets (property).

## VIDEO SURVEILLANCE SYSTEM FOR CROWDED PLACES AND MASS EVENTS



### The system is designed for:

- Control of situation in the streets;
- Coordination of efforts for public order maintenance;
- Dynamic response to unfavorable situations;
- Prompt alert of law enforcement authorities;
- Coordination of various divisions and services;
- Identification of offenders;
- Crime detection rate improvement.



# AUTOMATED INTEGRATED INFORMATION SYSTEMS





Information Analysis System for the Administrative Affairs Office of the President of the Republic Of Belarus (IAS AAO PRB)

Information and Management System of the State Defence Industry Committee (IMS SDIC)

Automated Borderline Surveillance System (ABSS)

Secure Electronic Mail System for Public Agencies with the Use of Electronic Digital Signature (SEMS PA)

United information system designed to control the execution of orders of the president (UIS CEO)

National Automated Information System (NAIS) of the Republic of Belarus

***The projects were implemented within “Electronic Belarus” State Scientific and Technical Program***



Automated Integrated Control System for Military Registration and Enlistment Offices (AIS MRO)

Automated Information System for Belarusian Border Forces (AIS BF)

Integrated Automated System for Regulatory (Supervisory) Activity in the Republic of Belarus (IAS RSA)

Information Analysis and Methodological Provision System for National Export Control System of the Republic of Belarus (IAMS NECS)

Automated Integrated Information System of the State Control Committee of the Republic of Belarus (IS SCC RB)

Automated Integrated Information System for Budgetary Control (AIIIS BC)

***The projects were implemented within “Electronic Belarus” State Scientific and Technical Program***

General recognition of high quality of products of OJSC “AGAT – Control Systems” – Managing Company of Geoinformation Control Systems Holding, as well as of its staff qualification is certified by numerous prizes and awards:

- the President’s acknowledgement,
- State Prize of the Republic of Belarus for achievements in science and technology,
- Certificate of Merit of the Council of Minister, the National Academy of Sciences, the Standardization, Metrology and Certification Committee.

The company is the winner of the Prize of the government of the Republic of Belarus in the field of quality in 2002 and 2005 and in 2011 confirmed high quality of products, services and manufacturing management.

Many employees have been granted state awards and honors.

The company has received a range of international awards for quality, commercial prestige and competitiveness.

