SPC «KRUG»

Software products

Founded in 1992, today **SPC «KRUG»** is one of outstanding engineering companies in Russia in industrial automation field.

Today **SPC «KRUG»** associate with reliability of complex automation systems, responsibility with respect to Partners and Customers, economic stability in business.

SPC «KRUG» is creator and supplier of modern industrial automation systems and branch solutions. Using uniform hardware and software, adapted for Russian standards, in designing and producing allow to decrease total cost of ownership fundamentally and to provide high level of saving rate from our production:

- Control Systems «turnkey»
- DCS
- Software
- Control room consoles.

Strategic direction of company activity related with standard solutions designing for industrial automation. Jointly with partners – engineering companies – we offering innovation individual and end-to-end solutions, including control and information systems, software and hardware communications.

SPC «KRUG» offers end-to-end solutions for automation problems in following fields:

- Heat-electric Power
- Heating networks
- Oil and gas
- Chemistry
- Building industry
- and other key branches.

Reference list are included Russia, Kazakhstan, Uzbekistan, Byelorussia, and Poland:

- More than 550 control systems, especially in dangerous fields:
- More than 150 systems in oil and gas field
- More than 250 systems in power engineering.

Professionalism and cooperation

Firm collective join industrial automation specialists, programmers, researchers, testing engineers, whose high-level skill and experience provides successful application of the achievements of technologies to firm production, solutions and service.

Organizational framework of firm includes following departments: control systems, system and embedded software, designing and producing, economics and finance, marketing, preproduction, also testing department, integrated solution department, metrology and quality department, information technologies department and training center. Scientific and technical council takes a policy decision.
Project-oriented principle, underlie organizational structure of firm, helps us to handle a big volume of concurrently running works concerned with business rapid growth and to provide high quality of these works.

Quality management system of SPC «KRUG» to the requirements of ISO 9001 corresponded since 2002.

Production and service

Choosing **SPC «KRUG»** as a partner, customers takes notice of optimum relationship "price-quality" of our products, availability of realized customizable projects, service completeness and firm's financial facilities. Department officers are intimated production specificity and they are able to offer end-to-end automation solutions proprietary for each customer and help in hardware selection and in systems engineering.

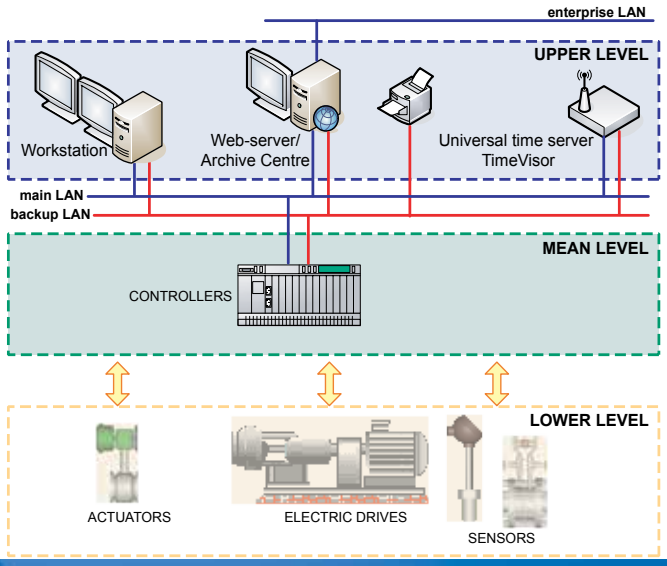
Software products

Software products of **SPC «KRUG»** are producing by embedded software department and system software department specialists using modern team engineering. It is afford to solve effective problems of project management, configuration and changes in software life cycle.

Application standard and innovative solutions in software designing provide a facility horizontal and vertical data exchange between subsystems of enterprise and affords to create multicomponent open medium for production control in integrated information field:

- Integrated SCADA KRUG-2000®
- Real-time systems for industrial controllers
- OPC-servers, device drivers.

SPC «KRUG» offers tools «KRUG OPC Toolkit», «SDK drivers» for third-party developers to create OPC-clients and device drivers, and also to carry out individual customs of software designing.



MODULAR INTEGRATED SCADA KRUG-2000®

SCADA KRUG-2000® is a tool for development of process control systems for crucial applications.

Distinctive features and advantages

Reliability

- Over 550 acting process control systems, including those for fire-dangerous and highly explosive manufactures.
- Development technology is certified by ISO 9001:2008
- Software and hardware automatic restart tools (for stations and controllers)
- Full redundancy of network, database servers, data input units, controllers and processing units on the first controller.
- Fail-soft redundancy of the Operator Station
- Support for cluster architecture with controller redundancy
- Smooth transition to the reserve controller
- Storage of archives on the controller and specialized communication channel «PC-controller (TM)»
- Differentiated access to system functions.

Consequences:

- The SCADA KRUG-2000 can be used for crucial manufactures and for building distributed control systems
- High reliability of control command transition and ensuring the required time of data transition within systems of Accounting, Dispatching and Telecontrol.

Openness

- Support of international standards: Fast Ethernet, RS485, RS232, CAN, DeviceNet, TCP/IP (UDP), Modbus, OPC DA/HDA, COM, DCOM
- Operative and historical data exchange via low-speed channels
- Data exchange with user's file server
- Tools for converting data to Excel, Access, XML and ASCII formats; configuration import/export
- API for accessing the real-time database, ODBC
- Huge libraries of drivers for high and low levels of process control system
- API for accessing archives
- Ability to manipulate controllers via DDE, OPC, API
- Data exchange with applications: API, DLL, COM, OLE

Consequences:

- Simplicity of integration with existing devices and systems, ability to work on slow and unreliable communication channels.

Modularity and scalability

- Modular architecture of the development and runtime environment for servers, stations and controllers
- Flexible configuration management
- Number of variables - from 60 to 64 000
- Number of operator stations – from tens to hundreds (limited by the power and performance of the server and network).

Consequences:

- Minimization of costs for purchasing the SCADA. You buy only those modules (functions) that you really need.
- Rational requirements to computing resources
- Ease of scalability of installed SCADA KRUG-2000 both in the number of variables and the number of functions.

Deep integration of the SCADA with controller programming environment

- Working with a unified, integral and consistent system database
- Data exchange with the controller via a reliable high-speed protocol
- Network startup of the controller, online diagnostics of the controller and its modules
- Support of the IEC-61131 standard on the higher and lower levels
- Normal and remote debugging of the controller (with or without halting the controller)
- Imitator of controller's real-time system
- Support of industrial bus standards: Modbus, CAN, DeviceNet, CanOpen and other
- Real-time systems for IBM PC-compliant controllers and Intel Xscale-based controllers - QNX, LINUX.

Consequences:

- Best dynamic characteristics of the system and maximum level of data processing decentralizing
- Minimum efforts required for configuring and debugging of a project
- Economic effect: no need to purchase software from different vendors.

Universal time system

- Synchronization of timers for all devices throughout a given process control system (servers, stations and controllers) including those using GPS.
- Redundancy of system time correction functions
- «Winter-summer» and «summer-winter» time transitions.

Consequences:

- Ability restore exact sequence of events on all system layers for any given time period.

Freedom of using any kind of architecture

- Dynamic local/remote connection of graphical clients to database servers
- Output of generalized signals from connected servers
- Interserver exchange of variables and events related to them

Consequences:

- Ability to build simple and hierarchical systems based on desktop or client-server architecture
- Ability to create specialized workplaces for generalized control over lower level SCADA.

Interface

- Object-oriented graphical editor and library of graphical primitives
- Trends and animation
- Project creation wizard, library of images and technological object templates
- Built-in report generator, functions for printing and storing reports in archives
- Scripting language.

Trends

- Minimal sampling rate - 100 ms
- Unlimited storage capacity for trend archives, unlimited number of trends displayed simultaneously in a window.
- Simultaneous rendering of operative and historical trends
- Pen selection: online; preliminary; output of value under the cursor (light pen).

Alarms

- Number of priority levels - 9
- Online grouping and filtering
- Generation of alarms based on changing rate and on deviation.

Library of functions

- Control and data processing functions (over 150 items!)
- Functions implementing technological and commercial accounting of thermal energy, natural gas and mineral oil
- Ability to create custom functions in C/C++ languages which can be easily integrated into function library of KRUGOL™ technological language.

Localization

- All system messages and documentation are in Russian
- Ease of localized versions configuration.

Main components

Development environment

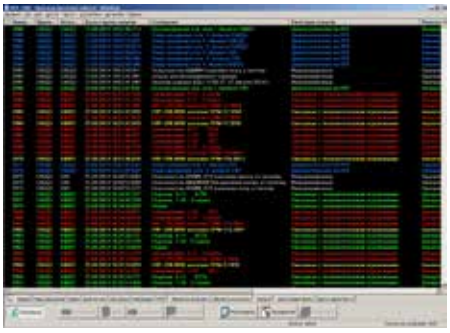
- Database generator and dynamics generator
- IDE «KRUGOL» for developing custom technological programs in FBD and ST languages.

Runtime environment

- Servers of main and archive databases, event server, mirroring of data between the main and archive databases
- I/O server, interserver exchange and multiserver access
- GUI, dual monitor manager
- Hardware restart, network redundancy
- Database objects' hierarchy, printing service, «file exchange», Statistics et al.

Runtime complexes (comprised of a set of runtime modules)

- Servers of main and archive databases, operator station - client, operator station managing archives – server, etc.



OPC SERVERS SPC «KRUG»

The SPC «KRUG» has long-term experience of developing OPC servers for devices made by various manufacturers and cooperation with the international OPC Foundation.

OPC servers produced by the SPC «KRUG» in addition to basic functions implemented by most manufacturers, have a number of extra features:

- Universal modem connectivity unit. The unit allows connecting modems of any model (including GSM modems) to any OPC server produced by the SPC «KRUG» (on request there may be established a communication channel through GPRS).
- Data transmission across multiple physical communication lines (required for accelerating access to the systems with a large number of connected devices)
- Support for port expanders and 8-channel adapters
- Test of connection that sends the diagnostics results to OPC clients and also writes them to the event log of the OPC server
- Export/import of an OPC server's configuration
- OPC servers of some devices implement the features of automatic search for plugged devices, correction of system time and other auxiliary functions.

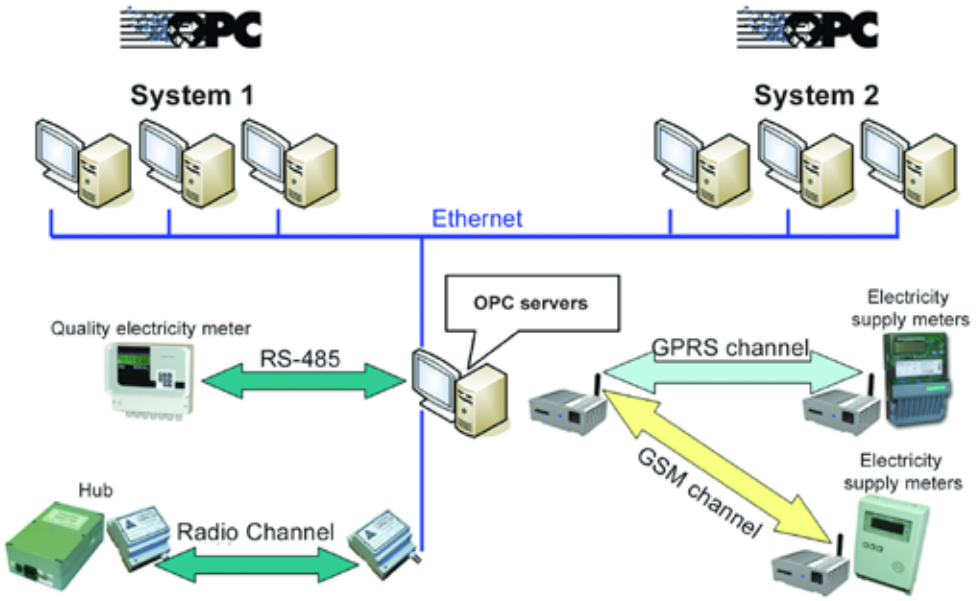
Usage of OPC servers produced by the SPC «KRUG»

- Boosts the number of potential consumers of devices due to significant simplification of setup and installation procedures.
- Eliminates the risk caused by the use of specific drivers
- Provides extended set of features, high performance and reliability
- Doesn't require additional modules to be purchased when organizing communications over the air (by default the channel is transparent for all OPC servers produced by the SPC «KRUG»).

We have developed OPC-servers for diverse devices and protocols, such as:

- Protocols MODBUS RTU/ASCII and MODBUS TCP
- SNMP protocols
- Manufacturing instruments JUMO, ASCON, KROHNE etc.
- Electricity meters Energomera, Incotex etc.
- Quality of electricity meters
- Fire-extinguishing devices
- Heat meters
- Other devices.

We also develop OPC servers on special order, therefore in you haven't found the OPC server for the required device on the list of OPC servers produced by the SPC «KRUG», our company will always be glad to help you! The list of OPC servers is constantly expanding and our company provides free technical support for them.



DEMO CD OF THE SPC «KRUG»
PRODUCTS AND SOLUTIONS FOR INDUSTRIAL AUTOMATION

The demo CD contains demo versions of the software products produced by the SPC «KRUG» as well and description of applications, reference and information materials.

INFORMATION MATERIALS

- General information about the company
- Information about the products manufactured by the company
- Full list of system applications
- Information about ready-made solutions for various branches of industry
- Technical articles on industry automation.

DEMO VERSIONS OF SOFTWARE PRODUCTS

«Quick start» – demo version of the SCADA KRUG-2000.
Contains everything needed for practical and visual acquaintance with the features provided by the SCADA KRUG-2000:

- Demo version of the SCADA
- Sample projects
- User's manuals.

The demo version of the SCADA KRUG-2000 works in two modes: «demo» and «real-time demo».

In the «demo» mode the user can create his own project using the development tools. In the «real time demo» the user can verify that project by running it with a «live» controller using an OPC client or the appropriate driver from the library.

Trial versions of OPC servers for various devices. There are OPC servers Modbus, OPC servers for JUMO devices, for electric counters, electric power quality meters and others.

There is also the OPC client development tool «KRUG OPC Toolkit».

You can order the CD by email - krug@krug2000.ru.

SPC «KRUG» is able to solve a queries of large-scale companies as medium and small-scale enterprises. For this purpose the firm use own experience and own innovation designs and also novel world achievements of industrial automation. And not casually, the policy of SPC «KRUG» in quality is formed as: «Permanent search of novelty, progressive, desire for exceed Consumer's expectations».

Dear Customers and Partners!
We highly appreciate Your support and close mutually beneficial collaboration – it is a guarantee of our successful activity in solving key problems of industrial automation.

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