

It is not easy to achieve success or even find a place for yourself in the surrounding reality. AB-MICRO has found such a place thanks to its clients and partners! We have been

- CAE/CAD software for automation systems design, electrical and pneumatics diagrams as well as technological processes,
- industrial series of active network equipment and fiber optic converters,
- electrical equipment and modular apparatus,
- predictive diagnostics system,
- as well as industrial HMI/SCADA software.

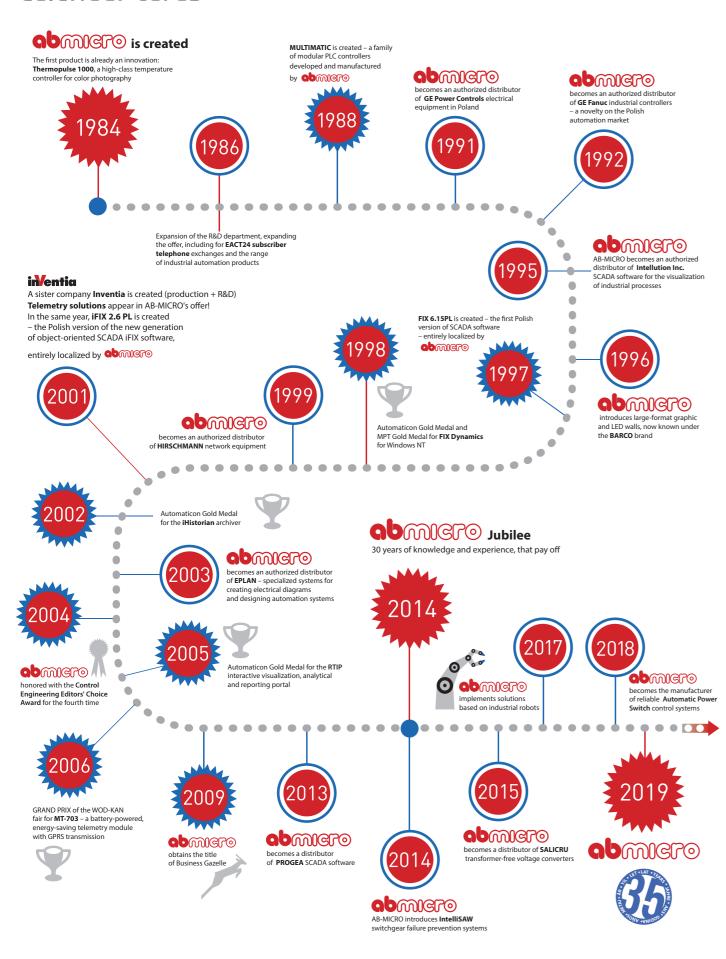
Recently we added to our offer the APS automation system that we manufacture, offering a wide range of power reserve switching solutions used in the power industry, industry, and infrastructure and public objects.

Thank you very much for your cooperation. We hope to support your activities for many years to come!

> Jerzy Białousz President

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Calendar cards

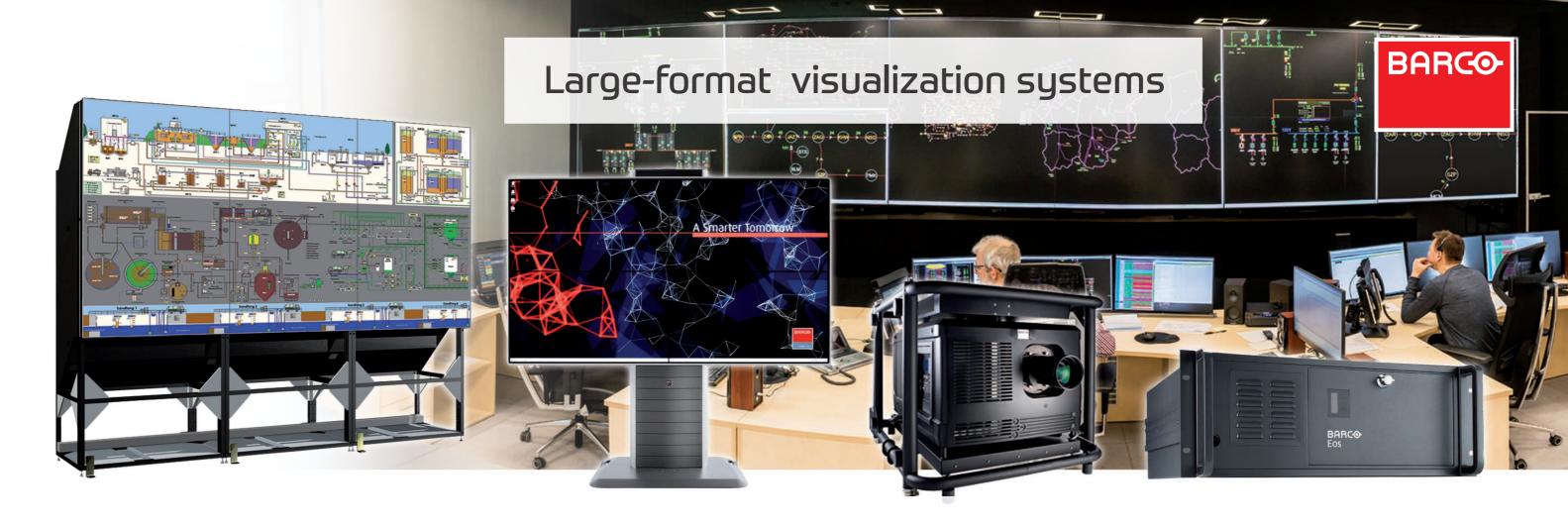




Comprehensive industrial automation solutions

» Large format visualization systems – BARCO	6
» Active network equipment – HIRSCHMANN	8
» Engineering CAE/CAD software – EPLAN	10
» Industrial HMI/SCADA software – PROGEA	12
» Low voltage equipment and industrial enclosures – GE Industrial Solutions	14
» Exertherm Predictive maintenance – QHI	16
» Integration – Implementations – Applications	18
» APS Reliable control systems	20

Our offer is constantly expanded



Barco is a globally recognized company that designs and constantly develops large format visualization products. They cover the entire spectrum of adapted available technologies used in various professional markets: in industry, medicine, entertainment, and advertising. Power distribution centers, police, army, industrial maintenance services, doctors and medical staff, government agencies, television, telecommunications, entertainment and advertising industries – all of them use large format visualization products. AB-MICRO has been a distributor of large format visualization products from BARCO since 1999, and earlier from Dr. Seufert Computer. We offer our clients the highest quality large format imaging products to optimize their tasks and missions.

Our offer of BARCO visualization systems includes, among others:

- DLP modular graphic walls of 50", 70" and 80" module diagonals with LED or RGB laser lighting system
- Graphic walls made of LCD panels with unique UniSee technology
- Large-format LED walls
- Very high brightness DLP laser projectors, up to 75,000 ANSI lumens
- 3D visualization systems for virtual reality needs
- Advanced graphics controllers
- ClickShare, the wireless presentation system

Among our references, we can boast following installations: at the National Dispatching Center Point of the Polish Power Grid, FRONTEX – the European Union Border Protection Agency, Traffic Management Centers in Warsaw, Poznań and Białystok, Network Management Center in Polkomtel, as well as in TVN and TVP TV studios, in power plants and power offices, the National Opera and many other places.

ClickShare is a family of BARCO wireless presentation systems. ClickShare joins a video conference room a matter of pressing just one button. This facility not only helps the speaker to start displaying the presentation in a few seconds but also allows other meeting participants to actively participate in it. This solution increases the efficiency of the meeting and streamlines the decision-making process.

Each ClickShare set consists of a base unit (receiver) and USB-powered buttons (transmitters). The base unit is permanently connected to the conference room video system and is responsible for the entire signal processing. In order to be able to present through a video system in a conference room, all you have to do is to plug in the button to the USB connector of your PC or MAC. After pressing the button, the user's computer desktop is wirelessly sent to the base unit and is displayed by the video system. ClickShare does not change the screen resolution of the computer from which the image comes. The desktop image is automatically adjusted optimally to the resolution of the video system.

The ClickShare family includes the CS-100, CSE-200 and CSE-800 sets. The simplest CS-100 set consists of a base unit and one button. The most advanced CSE-800 can be connected to two video systems and show images from eight users simultaneously.

We provide the full technical and commercial support in choosing the right system, tailored to your needs, the assistance in obtaining external financing, assembly at a convenient time as well as warranty and post-warranty service.

ClickShare system











The German company Hirschmann, known from the beginning of its activity for innovative solutions in the field of connectors for industry, has also specialized for years in industrial Ethernet devices. Ethernet technology, now widely used in industrial control systems, has become a global standard and replaces other serial fieldbus communication technologies. Implementations of real-time protocols, such as Powerlink in Ethernet, PROFINET or Ethernet/IP technology, have broken another barrier to applications and today the Ethernet technology enables deterministic control of fast machines and integration with CANopen protocols.

Hirschmann offers a full range of products for data transmission in the industrial sector using Ethernet and Fieldbus systems. The range of products offered includes switches working in layers 2 and 3, designed for both DIN rail mounting and 19" racks; industrial security systems, industrial wireless WLAN transmission systems; switches with extended operating temperature range, switches with IP67 protection, and finally freely configurable switches ensuring zero switching time on redundant connection – PRP. These products are used to work in modern control systems in many industries, such as industrial automation, process control, energy, road and rail transport, and mechanical engineering.

All Hirschmann devices are characterized by very high operational reliability, high mechanical resistance, standard operating temperature range from 0 to 60 °C and extended from -40 to +85 °C, significant connection distances between devices of 3-5 km for multimode fiber, and even over 100 km for single-mode fiber, and minimum maintenance requirements. Designers as main when designing industrial families of network devices considered these features as the main. Thanks to this, industrial devices by Hirschmann have unique features that other devices, adapted only for industrial purposes, do not have, and whose design is based on the office solutions. Hirschmann devices allow creating very extensive Ethernet networks linking from several to several hundred devices.

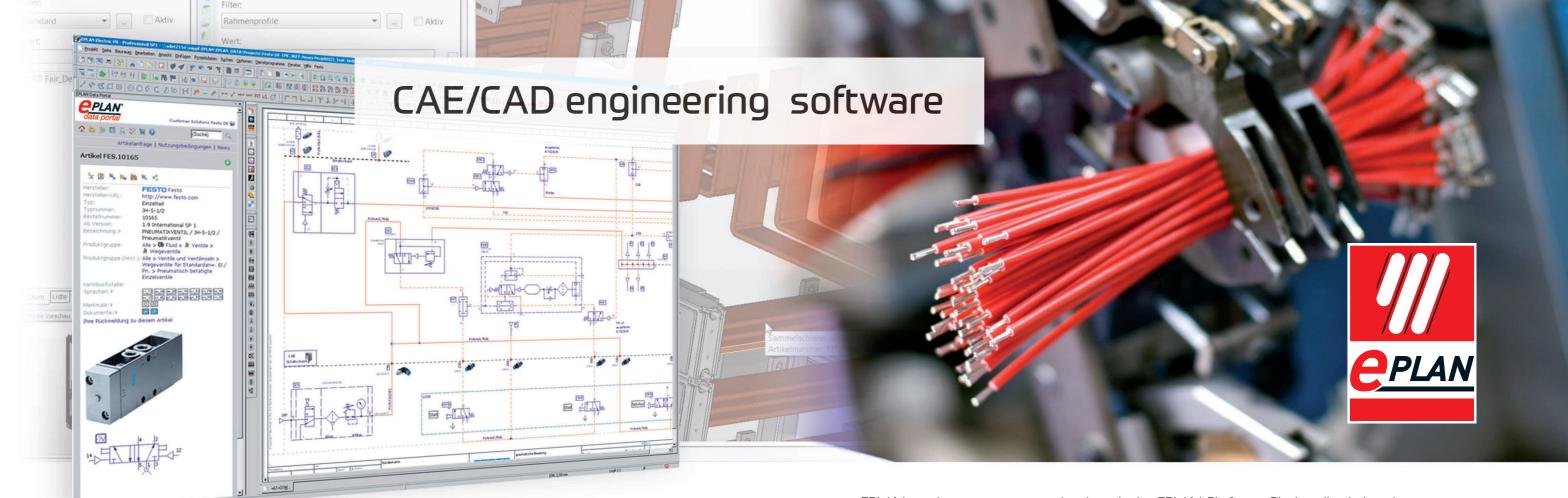
The reliability of Hirschmann industrial equipment demonstrates by:

- one of the highest MTBF indicators (average time between failures) over a million hours, thanks to using only the highest quality products,
- power redundancy,
- redundancy of connections between devices,
- loss of connection signaling,
- fans elimination,
- option to replace the module/card without turning off the power (hot-swap system),
- automatic configuration of the device after connecting it to the network ("plug & play" system),
- hours of factory testing in conditions exceeding the specified ranges.

Hirschmann designs and manufactures devices in accordance with ISO 14001:2004 while respecting the proper use of limited energy resources and environmental protection for the benefit of future generations. For over ten years, Hirschmann has been part of the American group BELDEN, one of the leaders in the field of industrial cabling.

AB-MICRO offers a full range of Hirschmann products necessary in the entire data networks of the company as well as a wide technical and commercial support package. Customers receive help in both the concept of communication solutions, tailored to their needs, as well as when planning, designing and launching networks based on Hirschmann products.

8 • www.abmicro.pl • • www.abmicro.pl • 9



We have been setting CAE software standards on the Polish market since 2003 as an authorized distributor of EPLAN Software & Service. Successful cooperation between the companies resulted in their dynamic development as well as a constantly growing number of satisfied customers.

EPLAN Software & Service develops engineering solutions that accelerate product creation processes. Interdisciplinary expert systems ensure maximum productivity and data integration. The company develops tailored concepts of PDM (product data management) and PLM (product lifecycle management), as well as provides comprehensive services such as consulting, training and customization of solutions. The factors that have determined the company's success are an innovative development strategy, a practical approach to engineering and an international presence.

EPLAN is part of Rittal International, and thus the Friedhelm Loh Group employing over 11,500 employees worldwide, which generated revenues of EUR 2.2 billion in 2011. EPLAN is synonymous with investment continuity and security. The company's presence in 50 countries means easy availability of professional consulting services and provides support to 51,000 clients, which also means 145,000 implementations around the world. Efficient engineering – this is a corporate motto emphasizing the importance of the optimal selection of effective engineering processes that support companies in their pursuit of success.

EPLAN offers process-oriented engineering solutions that meet all the requirements of customers from various industries. Whether they are solutions for specific fields, such as electrical or mechanical engineering, or comprehensive consultancy supporting the entire production process from the initial idea for the product, through its development and design, to production, EPLAN offers the right tools to meet various types of engineering requirements.

EPLAN products connect to each other via the EPLAN Platform. Closing all solutions in one compact body ensures that all applications feature the same functions and basic data, thus improving the quality of the project. There is no need to standardize data manually. The technology of the EPLAN Platform means the gradual introduction of a parallel engineering system that provides real optimization potential.

Our clients appreciate the automatically generated project-related documentation (cable, terminal, material and connection plans), which allows avoiding many errors arising during manual creation of reports. Designing based on prepared article databases and macros available directly in the application through the Data Portal module is also significant. Training packages, consultations, implementation and professional HOT-LINE service run by experienced engineers of the authorized AB-MICRO training center allow our users to acquire the necessary knowledge and experience in using the program.

EPLAN products:

- EPLAN Electric P8 a global standard for electrical engineering and automation
- EPLAN Pro Panel realistic installation of switchboards in 3D
- EPLAN Smart Wiring simplified wiring in the control cabinet
- EPLAN Fluid supporting the design of hydraulic and pneumatic installations
- EPLAN Harness proD effective design and documentation of cable harnesses and assembly tables in 3D/2D
- EPLAN Preplanning pre-planning of machines and installations
- EPLAN Engineering Configuration One automation of design processes
- EPLAN Data Portal a network service built into the EPLAN Platform that allows online access to the relevant data of devices coming from many component manufacturers
- EPLAN Cogineer automation of processes for creating electrical, hydraulic and pneumatic diagrams







For twenty-five years Progea has been involved in the production of visualization, data acquisition, and management software for industrial automation. Established in 1990, it has reached its position on the international market as a provider of automation software platform known for its professionalism and product innovation. HMI/SCADA software offered by Progea quickly became an unwritten standard and an indicator of new trends in the automotive, chemical, food, pharmaceutical, energy, oil and gas mining, water and sewage management, building automation, telemetry and environmental protection.

In 2013, AB-MICRO, constantly searching for the most modern industry solutions, signed a distribution agreement with Progea to provide Polish companies the HMI/SCADA MOVICON software. This software is recognized worldwide and used to improve productivity, reduce operating costs and optimize assets.

Movicon is a high-class visualization, monitoring, and control software, scalable from operator panels and workstations to extensive network SCADA systems based on the client-server architecture. It has been designed according to the requirements of modern industrial application structures, offering advanced architecture and ease of programming work with simultaneous flexibility in the selection of required functionalities. Thanks to such features of the Movicon environment, the costs of implementation and development of applications are minimized, because only one SCADA system is needed to perform various tasks of controlling and archiving production data.

Movicon offers tools for quickly creating advanced SCADA applications, which allow you to exchange data with standard automation devices and with business software, thanks to the use of modern technologies. Thanks to the use of WWW technology, the synoptic forms of SCADA applications can be easily displayed and operated from mobile devices.

Movicon enables remote visualization of objects and processes via the Internet, on desktop computer monitors and mobile device screens (smartphone, tablet, ultrabook, notebook). Over 130,000 installations of Movicon software have been implemented in various industries, which is proof of the high quality and universality of the solutions offered.

Important features of Movicon software include:

- open XML, ODBC, OPC, VBA, SOAP, SOA, Java, Web Services, TCP/IP, UDP, HTTP, RAS, SOL standards
- powerful, scalable SVG vector graphics with advanced animations
- fast real-time process database
- secure and efficient network architecture
- SoftLogic functionality in accordance with IEC 61131-3
- rich library of graphic objects and I/O drivers
- compliance with the requirements of FDA CFR2 | Part | |

In 2014, Progea launched the Automation Platform.NExT™ – an open industrial software platform based on the latest standards and technologies such as .NET, C#, WPF/XAML, OPC UA, SQL Server, HTML5, and Cloud, breaking the limitations of conventional SCADA/HMI technology. These solutions create solid foundations for long-term investments, offering openness and integration previously unavailable in the field of industrial automation. The platform contains all the necessary tools in one, flexible work environment for the design and operation of SCADA industrial software applications, with object communication management functions, data archiving, HMI, current and archive data analysis, technical maintenance management, remote access via the Internet, access protection, notification about alarms and events, etc.



Constantly seeking new software and technological solutions, AB-MICRO has established cooperation with the Belgian company Vynckier and since 1991 it has been a distributor of housings for various applications made of glass fiber reinforced polycarbonate. A year later, GENERAL ELECTRIC bought this Belgium factory, granting it the GE Power Controls brand, and took over and extended the distribution contract with AB-MICRO. Thanks to this contract, AB-MICRO gained a wide range of low-voltage equipment: modular apparatus, control, industrial, and DC traction apparatus. General Electric, present in Poland since 1992, currently employs 7300 employees in the industrial sector. The Polish GE Group consists of three factories specializing in electrical products. Over half of the GE products offered by AB-MICRO are manufactured on the domestic market.

The extension of the distribution agreement over other GE products means that AB-MICRO has a comprehensive offer, including a wide range of integrated devices and systems ensuring safe and reliable power supply. GE products include electrical distribution and control solutions such as circuit breakers, switchboards and general-purpose controls that are used to distribute and control energy in a variety of residential, commercial and industrial applications. Distribution companies, installers, switchgear manufacturers, general contractors, OEM, industry and widely understood service facilities around the world generate demand for GE products. AB-MICRO, in addition to high-quality GE products, also offers service and assistance of experienced engineers in handling industrial processes, enabling the creation of reliable solutions improving efficiency and profitability, and caring for the natural environment.

Our offer from GE Industrial Solutions includes a wide range of low voltage electrical equipment intended for electricity distribution and automation, including enclosures and switchgears. Those are:

- industrial housings made of polyesters
- system switchgears up to 4000 A

- modular low voltage equipment
- overcurrent and electric shock protection
- low-current protection for rail and maritime applications
- class I, II and III surge limiters
- compact circuit breakers up to 1600 A
- air circuit breakers up to 6400 A
- electrical connectors up to 4000 A
- soft start systems for electrical motors
- contactors up to 1250 A
- thermomagnetic motor protections

AB-MICRO is also a distributor of Tungstram luminaires and lighting products (formerly GE Lighting). Modern energy-saving LED lamps with exceptional efficiency up to 100 lumens/W and long light period, show 85% energy savings compared to ordinary incandescent bulbs, immediate start without flickering, and matching to most standard fixtures. Thanks to their properties, they protect the environment by fewer emissions of greenhouse gases into the atmosphere.

AB-MICRO has strengthened cooperation with GE Industrial Solutions also in the field of software. It has developed a database of GE devices available for EPLAN software that can be used by industrial system designers, engineers during production, assembly and subsequent continuous system control at every stage of implementation. Thirteen thousand product references in the field of medium voltage apparatus, control, and control equipment, as well as low voltage protection and housings, have been placed in the EPLAN database in the form of high-quality 2D/3D drawings, technical data, and macros that can be used on the EPLAN Electric P8, EPLAN platform Pro Panel or EPLAN Engineering Center software.

14 • www.abmicro.pl • www.abmicro.pl • 15



The safe operation of power equipment and the prediction of critical threads is an area of particular interest of AB-MICRO Company. The key parameter determining the risk of failure in energy distribution systems is temperature. Temperature measurement at critical points of the switchgear allows monitoring the phenomena that could pose a significant threat. AB-MICRO is a leading supplier of new generation temperature sensor systems for intelligent network applications. These systems are implemented into the intelligent energy distribution networks, from where they provide important data necessary to increase the efficiency and security of energy transmission.

The system of the effective prevention of electrical switchgear failures is based on constant monitoring of temperature. The failure of the electrical switchgear may stop the production, and also may cause the risk of human life. A preventive system of wired or contactless, battery-free temperature sensors gives the opportunity of constant monitoring of the switchgear's operating temperature and does not require constant maintenance. With accurate real-time measurement data delivered from a monitoring system for the key energy transfer points, it provides energy companies with early warning of potential problems. Such a system generates an alarm signal when the dangerous temperature is reached. The user sets the threshold values of the temperature. This allows for taking effective corrective action. The measured data may be presented on the workstation's monitor or shown on the local display or can be archived in the superior SCADA system, e.g. Progea Movicon.

Temperature monitoring systems can be placed in low- and medium-voltage switchgears, in control cabinets, and in high-current DC circuits. They can monitor the temperature on the clamps supplying motors and high-power generators, on buses and cable heads, as well as on transformer terminals. Wherever current solutions have failed or are very expensive, i.e. periodic thermovision measurements, permanent camera placement in controlled fields, or battery-powered sensors signaling alarm states when the battery is exhausted, you can use the temperature monitoring systems. Solutions offered by us can be used in any existing energy infrastructure, maximizing its efficiency and protecting assets. They do not require an additional power supply, they are highly scalable and, depending on the needs, allow for use of the contact or contactless sensors.

The monitoring system built on the basis of the temperature sensors which we offer, depending on the technology used, allows to effectively observe even tens of critical points inside the switchgear. The measurement technology used there allows the observation of almost all points, including those that for safety reasons are not available for thermal imaging cameras or other conventional measurement methods.

The network analyzers, displays and humidity sensors can extend the system to improve the service of protected energy facilities.

16 • www.abmicro.pl • www.abmicro.pl • 17



INDUSTRIAL AUTOMATION

We deliver and provide the integration services of control systems for various industry branches. We offer system implementations covering many advancement levels, from measuring and visualization to control the production processes. We implement so-called Smart Factory solutions, characterized by a high level of technical sophistication.

Programming of PLC and control devices, HMI

We offer programming services, from scratch, including the development of control algorithms, modification and migration of software. We implement systems containing HMI operator panels. We finish each programming task with the documentation and a backup of the completed applications, which are passed to the user.

Robotics, robot-human cooperation

In connection with the development of the automation branch of the cooperating robots, we offer implementations covering issues in this field. For the cooperating robots, we design robotic cells as well as the single or connected stations. We integrate robots with the classic automation systems and modern vision systems and with the measuring and control equipment.

Supply and assembly of control cabinets and C&I

Working with our partners and subcontractors, we develop, assembly and deliver the mechanical components, control cabinets, and control and measuring equipment. The supplied systems are developed and prefabricated by experienced employees.

Object-oriented works

Within the executed implementations, we carry out object-oriented works related to starting, control of operation correctness and tuning of implemented systems. We carry out FAT and SAT testing phases.

Technical support

As a part of the implemented applications, we offer post-implementation services, post-warranty service as well as the extension and modification of the existing solutions. We conduct training in the field of operation and maintenance of implemented systems.

MASTER APPLICATIONS

We offer the delivery and implementation of master applications based on SCADA/HMI systems, software protocol converters, and data archivers. We integrate and prepare SCADA software for cooperation with a higher-level of IT systems.

Visualization and SCADA master applications

We make SCADA visualization systems allowing the monitoring, remote control, and parameterization of the process from a level of operator workstation. We implement stand-alone solutions, in client-server architecture and redundant solutions.

SCADA in WWW technology

Wide and easy access to the local and global computer networks affects more and more widespread use of internet technologies in presentation and data access. The use of WWW technology in industrial applications is becoming more visible. We offer development and implementation of SCADA applications in the Web Client architecture.

Data archiving, reporting

The master system, which we offer, has mechanisms for archiving process data based on relational SQL databases or industrial data archiver. Based on the collected data, we prepare production reports with varying levels of detail.

Data transmission, protocol conversion

Data transmission as the basic source of information is carried out using industrial communication protocols, which often require conversion to connect devices from different manufacturers. We offer hardware and software data conversion systems, concentrators, and converters of electrical signals into digital protocols.

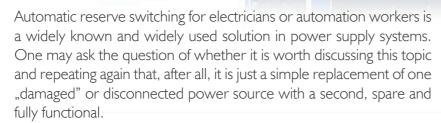
Local and remote communications, industrial networks

We offer solutions for wired and wireless data transmission. We perform tasks using data transmission bus, Industrial Ethernet networks, and remote data transmission.









In principle, one could agree with this thesis if it were not for a fact that power sources and, more precisely – transformers with the entire power grid infrastructure, or generators offered in a wide range of different solutions are only devices that may not fully meet the high requirements of electricity consumers. Additionally, each designed power supply system with the passage of time (installation of subsequent receivers) reaches its limits on energy supply possibilities. In the case of introducing changes and increasing the number of energy receivers in relation to the basic design, there are needs for changes in the control of the power system. In addition, the newly designed facilities have by definition installed power (the sum of the power of all consumers on the facility) being higher than the total power of the power sources. Therefore, without delving into the issues of power systems design, it can be concluded from such premises that the requirements set for automatic reserve switching systems are constantly expanding.

During the optimization of the powering system project, it is possible to reduce significantly the costs of building the control infrastructure by using the wide possibilities and new technologies used in modern automatic reserve switching systems of APS Smart type. Simple switching is no longer sufficient.

Such attributes as:

- flexibility in choosing the program version,
- adjustment of the control algorithm to the specific of the user object,
- the management of the load discharge,

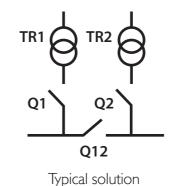


- visualization with the local (up to 15 m) or remote (up to 1200 m) remote control,
- the event archive the event log,
- the multi-level security system in APS automation,
- modular design an option of choosing the equipment versions,
- secure GPRS / 3G / LTE transmission,
- reliability of APS automation,
- visualization in the cloud of the power system, of the processed data from network analyzers, of the selected temperature-sensitive temperature measurements (on-line "thermovision"), event archive,

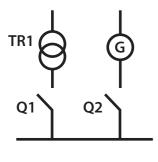
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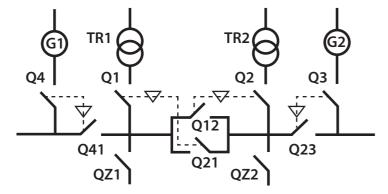
- cloud access from mobile devices connected to the Internet (laptop, tablet, iPhone, etc.),
- SMS alarm notification for the selected events.

provide the wide possibilities of using APS Smart in the implementation of modern, easy to use and maintain power supply systems in industry and infrastructure. The following are selected examples of standard power installations supported by the APS family:









Basic solution

Complex solution

In most objects in which it is decided to create traditional, complex and expensive SCADA visualization systems, it is excluded, for security reasons, to connect such a system to the Internet. APS Smart has no such restrictions.

This advantage opens the way to the use of available data from the energy system in predictive maintenance, especially in the facilities without constant technical supervision.

Presentation in the form of:

- current power configuration;
- graphs of power consumption variation P, Q, S;
- changes in the current flow;
- fluctuations in the supply voltage level;
- detection and recording of anomalies in the mains;
- higher harmonics content and THD ratio control;
- temperature monitoring at critical points (on-line "thermovision") such as transformers, main connections, selected points in the main switchboard,

gives a consistent view of the installation's operation and the ability to assess its weaknesses. The selected and representative information, provided in the form of transparent SMS messages or the option to write to the event log, facilitate the operation and maintenance of the power installation with a high-reliability factor. They also allow seeing the potential opportunities for improvement in the power supply system, elimination of undesirable phenomena and achieving financial savings.

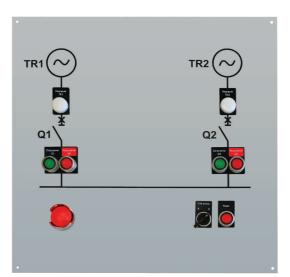


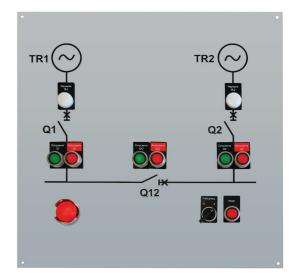
Reliable control systems

Despite the new projects, a number of operating power installations that require modernization exists on the market.

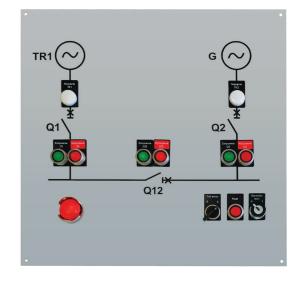
For such purposes AB-MICRO has prepared the sets of automatic reserve switching of APS RETROFIT type:

- automation board equipped with plug-in connectors;
- synoptic assembly equipped with cables with plug-in connectors for automatic reserve switching;
- operator terminal as an option to be installed or rented for the automatic reserve switching parameterization.





Such a set enables fast and efficient assembly of the automation system, without taking up valuable time necessary for labor-intensive works of replacing power equipment during the modernization of the switchboard. At facilities where even short-term power breaks are a huge difficulty disorganizing the operation of an enterprise, the time to complete modernization is crucial. There are cases when modernization is possible once a year for a few hours. A carefully thought-out modernization plan, the use of proven solutions and components allow the efficient, quick assembly and commissioning gives the chance for final success. The modular design of automatic reserve switching systems allows the selection of equipment and available functionalities needed by the user. This allows adjusting the price of the proposed solution to the expectations of the client.

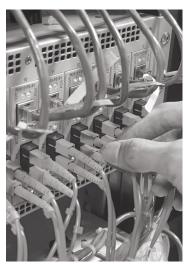


22 • www.abmicro.pl • www.abmicro.pl • 23









AB-MICRO Sp. z o.o.

ul. Kulczyńskiego 14 02-777 Warszawa, Poland tel.: +48 22 545 15 00, fax: +48 22 643 14 2 l www.abmicro.pl, www.movicon.pl, www.szr-aps.pl www.eplan.pl, www.systemy-sterowania.pl e-mail: abmicro@abmicro.com.pl

BARCO & Hirschmann – tel. +48 22 545 15 4 l GE Industrial Solutions – tel. +48 22 545 15 20 Integration – Implementations – Applications – +48 22 545 15 34, -35 Predictive maintenance – +48 532 75 1 618 APS Reliable control systems – +48 538 237 832

- EPLAN KATOWICE
 ul. Grabowa 2
 40-172 Katowice
 centrala: +48 662 868 869
 Hot Line: +48 666 881 771
 www.eplan.pl
 eplan_serwis@abmicro.com.pl
 eplan_handel@abmicro.com.pl
- EPLAN POZNAÍN
 ul. Wł. Węgorka 20
 60-318 Poznań
 centrala: +48 662 868 869
- EPLAN GDAŃSK ul. Jaśkowa Dolina 81 80-286 Gdańsk centrala: +48 662 868 869
- GE KATOWICE
 ul. Grabowa 2
 40-172 Katowice
 tel.: +48 600 477 407
- GE POZNAŃ
 ul. Wł. Węgorka 20
 60-318 Poznań
 tel.: +48 600 477 418
- GE GDAŃSK ul. Jaśkowa Dolina 81 80-286 Gdańsk tel.: +48 600 477 414