

CASE STUDY

**COMMUNICATION / INFRASTRUCTURE / NETWORKING &SECURITY /
ICT INFRASTRUCTURE / INTELLIGENT BUILDING MANAGEMENT SYSTEMS & AUTOMATION /
LOW VOLTAGE SYSTEMS & SOLUTIONS**



SOUTHERN VARDAR VALLEY HYDRO SYSTEM

More than two thousand hectares of agricultural land is covered by a closed irrigation system in the Valandovo region. The "Southern Vardar Valley" hydro system begins to function. Farmers see in it a salvation from long-term droughts. The system will enable timely and rational irrigation, but also greater yields in agriculture. The hydro system costs 24 million euros. It is financed through the Ministry of Agriculture, Forestry and Water Management, with money from the Macedonian government, and the Government of the Federal Republic of Germany.

CHALLENGES

Central system for supervision, management and automatic regulation (SCADA) of the main pumping station in Udovo and booster pumping stations for irrigation, performed using the program package GENESIS64 of the company ICONICS.

PRODUCTS AND SERVICES

The SCADA irrigation system in South Vardarska Dolina contains a central computer with installed base and application programs for the operation of the system connected to a central 50 inch monitor which has the task of generating the visual display. The computer is located in the facility in a specially provided room located in PS Udovo. All generated reports can be printed. The tasks of the system are:

- Automatic management, monitoring and regulation of work processes of technological units in real time from one workplace-computer.
- Collection of all important parameters from the objects and displaying them to the operator on a monitor with the current values and states – measurement of flow, pressure, cumulative flow, alarming, showing which consumers are working, showing values of the analog signals that are led to the executive regulatory authorities, display of the state of the counter of working hours of motor consumers, etc...
- In the event of a failure of any part of the equipment and sensors, or a deviation of preset values from the entered parameters for the curve of the pumps, an immediate alarm on the monitor with an explanation of the events, followed by a sound signal and recorded in file
- Monitoring with pre-defined limit values (pressure, flow, counting of working hours for motor consumers, etc.)
- Realization of the remote operation management of tabular shutters, at the request of the operator from the monitor by issuing individual management orders, authorization to start or stop operation at the level of the entire pumping station or automatically.
- Counting the hours of work of each motor consumer.
- Prevention of electric shocks with the help of an auxiliary power supply to maintain the behavior of the system in case of interruption of power supply from the city network and the return of voltage.
- Defining different levels of access to the system
- Archiving data collected from measurements, their display in the form of time-oriented diagrams, graphs, etc. in order to analyze the operation of the system in a certain period of time

WHY KABTEL

Combining our relevant industry expertise and implementation experience in various fields, we analyze your existing workflows and identify your greatest opportunities and automation needs. Once we identify them, we break them down into their component parts and start building an implementation road-map for them based on the best automation approach. We work closely with you to build automation processes, using the system's simple user interface and visual front-end to design integrated workflows, all in one platform, using solutions and expertise, own or supported by established partner brands. The solutions are custom made, on a turnkey basis, integrated with current processes, with additional cyber security solutions implemented, continuous support from our certified colleagues. The implementation enables: Increased productivity, stronger security, streamlined compliance, greater operational efficiency, better collaboration, enhanced service delivery, significant cost savings, reduced errors, reliable insights, standardized processes, gained transparency, improved customer satisfaction...

BENEFITS

- Centralized monitoring of the operation of all systems from one place in real time
- Immediate detection of errors and exceeding the parameters that are important for the operation of the facility
- Timely warning for necessary servicing of the equipment based on the counter of working hours
- Generating a database for system operation that is necessary for tech no-economic analyses
- Possibility of using program packages for saving energy during system operation
- Reduction of working power
- Simplification of electric drive cabinets by reducing classic relay techniques to a minimum, which results in a reduction in their dimensions and simplification of maintenance.

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TIKVEŠ WINERY

Tikveš Winery was founded in 1885 in a region with centuries-old wine-making tradition, blessed with perfect natural conditions, warm and passionate people, and a lively, authentic culture. Tikveš has always had a penchant for going beyond expectations, embracing innovation, and conquering new markets. Over the years Tikveš acquired more prime land than any other winery in South Eastern Europe. Tikveš owns the latest technology and employs some of the brightest and most experienced talent in the business, to ensure that the superior quality of Tikveš products is maintained at all times. Tikveš portfolio of fine wines stretches across several categories to fit every occasion, winning numerous highly-acclaimed international awards, year after year.

CHALLENGES

The goal of the project was the design and implementation of:

- High-voltage and low-voltage installations
- Automation for the HVAC (Heating, ventilation, and air conditioning system
- BMS (Building Management System) in the newly built offices of the Tikveš company in Kavadarci.

The main task of the Engineering Automation, Integration department of KABTEL was designing, manufacturing, and connecting the control cabinets for the automation part of the HVAC system, which includes 24/7 automatic control and distribution of air quality in the workplaces. Design and development of BMS for 24/7 control of heating, cooling and lighting in every office, with the possibility of control according to the wishes of the employees.
With the successful installation and adjustment of the systems, a fully automated control and an energy-efficient modern workspace have been created.

PRODUCTS AND SERVICES

Equipment from renowned manufacturers was installed for each of the systems. The HVAC system is equipped by SAUTER and HITACHI, where the SAUTER sensor equipment in combination with the HITACHI PLC controller provides complete and safe control of the HVAC system. CYBROTech – ROBOTINA equipment is installed for BMS.

- Advanced, easy-to-use system for best working conditions, comfort and efficiency
- Intuitive user interface for every user and SCADA system for central management
- Easy setup and integration with any iBMS, HRM, access control and other systems
- Local control and automation, energy efficiency and other services through cloud

BENEFITS

With this solution and the European standards of operation, fully automated control and monitoring

- IoT connectivity solutions
- Multi-modal network using copper wire, fiber optics, and wireless
- Save energy
- Deliver comfort
- Manage facilities
- Data reporting
- Processes without the participation of the human factor
- Huge savings
- Maximum efficiency
- Active contribution to environmental protection are enabled
- Reduced Maintenance Costs
- Improved Safety and Security
- Enhanced Building Operations and Management

WHY KABTEL

Kabtel is offering integrated solutions: from current installation, HVAC, BMS, and Network infrastructure, all in one turn-key solution. With our vast experience, we are able to offer the most effective custom-made solutions to our customers. Our BMS solutions in combination with wireless monitoring and control systems will provide a significant improvement in energy conservation and occupant comfort over the other solutions. A BMS connects the HVAC and different building equipment to work as one integrated unit. Ideally, they should centralize operations and make data easier to visualize using a user interface or console. Our Solutions include:

- IoT connectivity solutions
- Multi modal network using copper wire, fiber optics, and wireless
- Save energy, Deliver comfort, Manage facilities, Data reporting.

Complete optimization of most processes also enables a reduced carbon footprint in nature, by reducing the emission of CO_2 into the atmosphere.

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KAM MARKET

KAM, today one of the largest chains of markets for food and non-food products, started its activity with only one market in 1999, but thanks to continuous expansion, today it has its own network of 75 markets throughout Macedonia, and it also has its own markets in Bulgaria and Kosovo.
The latest achievement of KAM Markets is the biggest logistics center so far in Macedonia, built according to the most modern standards on a total area of 60,000m2, in the building that extends over an area of 16,000m2.

CHALLENGES

Automation of the cooling system in KAM
The goal of the project, which KABTEL in cooperation with the Vatalco company has carried out in the facility, is an automated 24/7 supply of the necessary amounts of water to the cooling system for the needs of the logistics center.

The main task of the BMS and automation and network solutions department of KABTEL, which it successfully implemented, is the automated monitoring and control of the distribution of the required amount of water for the needs of the cooling system. The water supply is carried out from three wells with a depth of 50 m in which Vatalco has previously installed submersible pumps with a power of 7.5 Kw.

PRODUCTS AND SERVICES

In each of the wells, KABTEL has installed electrical cabinets in which frequency regulators from the renowned HITACHI brand are installed, with all the accompanying equipment, to enable the safe operation of the pumps, and a connection with the main cabinet where the HITACHI PLC controller is located is also enabled, which is in charge of managing and controlling each of the wells in a common system. The whole process is monitored on the WEINTEK operator panel which is installed on the main control cabinet.

BENEFITS

With this solution and the European standards of operation, fully automated control and monitoring

- Processes without the participation of the human factor
- Huge savings
- Maximum efficiency
- Active contribution to environmental protection are enabled.
- Complete optimization of most processes also enables a reduced carbon footprint in nature, by reducing the emission of CO_2 into the atmosphere by about 900 tons.

WHY KABTEL

- Our success is due to our intimate knowledge & understanding of automation systems, our technical excellence, extensive experience and the skills & competencies of our staff, and also best automation solutions products on the market
- We offer outstanding customer service before, during & after installation. For example, the initial site survey and our custom made solution will ensure that your specific needs and desires are met efficiently, effectively and aesthetically.
- We are dedicated to providing a bridge to the best automation technology that will provide you with a state of the art system that will manage your application for you.
- Our solutions provide you with a simplistic usable interface to that system that is accessible from anywhere and we are committed to keeping that system updated and current through our ongoing certifications and applications pursuits.
- We specialize in creating and supporting customer usable systems to solve your facility management problems!
- We understand your businesses needs and the industry it is in. We are experienced in every industry and we know how to keep your business on top of it's game.

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MACEDONIAN PHILHARMONY, Skopje

After 73 years of existence, the Macedonian Philharmonic got its own home. A new music sanctuary that will start writing a new history of the oldest national music institution in the country. The modern concert hall, built according to globally recognized standards, is an example of how the space intended for the symphony orchestra, representing the symphonic works on the Macedonian music scene, should look and function.

CHALLENGES

- Building management systems are a vital component to any facility. It is an infrastructure control system that is installed with the aim to make secure and reliable buildings. The system allows centralized management of infrastructure equipment through an integrated computer-based application (BMS software) and ensures operations are being run efficiently and securely. It gives access to control and monitor activities such as ventilation, heating, lighting, power control, fire and security systems, lifts/elevators, plumbing systems, etc. Telephony solutions are one of the core communication methods within an organization, as well as with the outside world. They must provide reliability, scalability and flexibility for future integrations.

- Wireless network solutions offer visitors the possibility to always stay connected, surf the web or be active on their social media, giving them an enhanced experience of any venue or public space throughout. A system that provides a fast and reliable connection, and supports high density scenarios is key for a publicly used wireless network.

- Cyber Security is a must in the digital world. A solution that offers versatile protection against different types of threats, provides control of access to the web or networked systems and gives enriched visibility through reports and statistics is needed in order to protect network, data and devices safe from harm.

PRODUCT AND SERVICES

- A Building Management System - a central supervision, management and automatic control system- is designed and installed in the building, and uses the BMS software package, with the help of the novaPro Open software package. The project also covers the underfloor heating management. The system is connected to the central communications system, managed via a central computer, which is decentralized with the option to control it both manually and locally, including all the parameters that are necessary for the operation of each of the systems, with the possibility to adjust them individually. The priorities of operators with different access levels are defined on the central computer. All measurements, including all discrete signals, as well as the signals used for adjustment are displayed visually, while the alarms and warnings are recorded in a database. The system has the following tasks: automatic recording, monitoring, and control of work processes collection of all important parameters and states (temperature, pressure and humidity measurement, display of active consumers, alarms, display of working hours of individual elements), early warning for necessary equipment maintenance, predefined limit values, automated time management to save energy, central selection of cooling or heating modes, ability to store data, etc.

- A Telephony solution by Alcatel-Lucent is installed to provide employees a reliable, scalable and cost-effective mean to communicate within the organization, and more importantly with the guests interested to ask questions or book tickets through the phone booking service.
- Wireless network solution by EnGenius Networks is implemented in order to enhance visitor's experience, offering a quick, stable and reliable connection throughout the building.
- A Cyber security solution in the way of NGFW from the brand Sophos is installed to provide maximum protection and control of the network, devices and data passing through.

WHY KABTEL?

- Our understanding of, and ability to work with, both the mechanical and control systems allow us to view your facility's environmental systems as one cohesive system. By looking at the related systems together, we are able to ensure that all components are working together in the most energy-efficient manner to provide building comfort increase, and decrease costs. We believe that the quality of service along with a sincere interest in the customer's satisfaction are absolutely essential for a long-term partnering. We have employed expertise in a number of BMS Systems including Sauter, Robotina, Cybrotech, Trend Controls, Sophos, Alcatel-Lucent, EnGenius, etc..."

BENEFITS

- Energy efficiency & reduced labor
- Real-time view into systems and data analysis allows immediate detection of errors and exceeding the parameters important for facility operation
- Ease of information availability
- Generating a database for system operation that is necessary for techno - economic analyses
- Effective use of maintenance staff
- Early detection of problems
  Reduced risk
- Intelligent reporting
- More satisfied users and visitors
- Simplified communication
- Safety and security

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SPORT CENTER "JANE SANDANSKI"

"Jane Sandanski" Sports Center is a multifunctional facility which contains a large sports arena with a capacity of 6.500 visitors, a small sports hall with a capacity of 1.000 visitors, a conference room, tennis courts, fitness and aerobics center, a playground and sports equipment storage and a fans shop HUMMEL Vardar.

The Sports Arena has a capacity of 6.500 visitors, made according to the standards for any international competition in basketball and handball. The Sports Arena is the first arena with three children's areas with 40 seats, four fans zones, and seven VIP rooms.

Within the sports center there is a smaller gym, which is mainly used for trainings and sport activities for basketball, volleyball, handball, indoor football, etc ... with a capacity of 1.000 seats.
S.C. "Jane Sandanski" has a conference room where press conferences and different events of this type are held.

CHALLENGES

- To integrate disparate HVAC control systems into a centralized facility management system;
- To begin a process of building integration into the facility management system;
- To design & Build a control system with a maximum efficiency thus to reduce energy costs;
- To standardize on a common platform;
- Policy for using open standards to achieve competitive price;
- Flexibility for incremental retrofits.

PRODUCTS AND SERVICES

- SAUTER Intelligent Control of machinery control board:
  - On/Off controllers (Thermostats, Frost monitors, Pressure switches)
  - Sensors and transducers (Temperature, Flow, VAV, Differential pressure, Air quality)
  - Electric drives, control valves, butterfly valves
  - Distribution boards for the logic
  - Management level software (novaPro Open Suite)
  - System integration (communication module with M-Bus and EIA – 232 interfaces)

WHY KABTEL?

KABTEL with SAUTER building automation links all systems and optimizes their interaction with a maximum energy efficiency. It automatically determines (for example, using presence detectors and sensors) the real requirements for heating, cooling, fresh air and provides the right amount of energy, at the right time, and on the right location. This type of needs-based building automation system prevents energy waste and results in a noticeable and worthwhile reduction in operating costs with swift repayment.

Modular components complete SAUTER's building automation for integrated solutions enable special applications:

- MODBUS: machinery plant
- M-Bus: meters (heat, electricity, gas, water, etc.)
- BACNet: Building Automation and Control Networks
- VFC Voltage Free Contact, signalization with other systems (fire protection, ventilation, ...

BENEFITS

TEHNICAL

The contract was offered to SAUTER due to its extensive know-how in the technical building management sector, as well as its proven experience in other, similar projects. SAUTER has been responsible for the management of the Jane Sandanski arena since 30.08.2014.

The services provided by SAUTER for the premises include, in particular, the technical building management, maintenance, inspection and servicing of the building, also the monitoring of the warranties. They also cover fire protection and safety technology. In case of a fire emergency all ventilation systems prevent the fire to be spread inside the space of the arena.

There are a lot of technical benefits which make this system easy and efficient.

- This system is one of the most energy efficient systems in the country. It manages to produce and accumulate energy in the water-thermal accumulators, during the low cost tariff from the grid, and supplies with energy all consumers systems whenever needed, which contributes to a high level of reduction of costs per kWh.
- The SAUTER building management system incorporates 21 BACNet controllers monitoring and/or controlling more than 1.400 spots, which helps SC Jane Sandanski staff to be more proactive and efficient.
- The WEBs system is accessible anyplace where authorized staff has the use of a computer with Internet access.
- It also helps the staff to quickly determine the status of all systems and to react accordingly.
- The automation of the HVAC system helps to sustain the air quality needed inside the arena, making it more pleasant for the audience during any kind of event.
- In case of a fire emergency it reacts automatically closing the protection lids in ventilation systems preventing smoke spreading. It also starts the fans which draw the smoke out.

FINANCIAL

As a benefit of the integration of the new BMS system, the global costs of SC Jane Sandanski have largely been reduced. The electrical bills are at minimum using the supply from the grid at night when the electricity tariff fee is at low cost.

USER EXPERIENCE

The employees are indeed an important success factor for a smooth operation of the Jane Sandanski arena. Because the arena accommodates, in a tightly scheduled succession, many events of various types and different requirements, it continuously needs adequate staff for the facility management. This requires a high availability more or less around the clock – a challenge that KABTEL can master owing to its extensive experience and intelligent planning.

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