The zenon software platform ensures independence and flexibility

Minimizing water losses at Kraški vodovod Sežana with zenon

With its 660 km network, Kraški vodovod Sežana supplies drinking water to Kras and the hinterland of the Slovenian Istria. The zenon software platform from COPA-DATA is upgraded annually with new features and functionalities and has been essential for reducing water losses, monitoring the network and preparing analysis and forecasts.

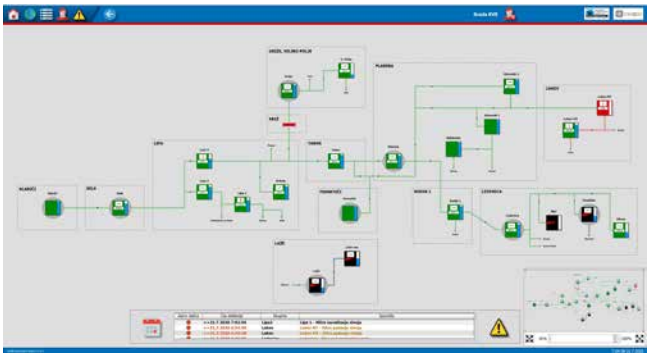
"The most precious water is the water that is not there," says Primož Turšič, the general manager of Kraški vodovod Sežana d. o. o.. The public water supplier has an extensive network of 660 kilometers over an area that encompasses five municipalities. It provides 95% coverage for the region. The network supplies water to 12,000 households, which equates to one connection point per 55m of pipelines. Kraški vodovod Sežana also serves as the backup water supply network for the entire coastal region of Slovenia.

It is located on a Karst plateau where, due to poor natural accumulation and limestone soil, water scarcity is a common occurrence. The persistent water scarcity has always strongly influenced the way of life in this area. This is one reason why, to this day, its inhabitants have a respectful attitude towards this extremely important natural asset. An adequate water supply in the Karst area was only achieved in 1984 with Klariči, a reliable water source located 150 meters from the Italian border. Water is pumped at 20 meters below sea level from three wells that are 60 meters deep. Prior to the introduction of this pumping station, water rationing had to be carried out in the area on a daily basis.

VISUALIZATION AND REMOTE MONITORING

A telemetry system based on the zenon software platform encompasses four management and control modules. These oversee water supply and sewage systems with treatment

The control systems for the individual facilities are linked to each other and to a control room, which gives engineers a complete overview and allows for fast reactions.



The system gives operators access to an overview of the entire communal water supply network.

plants, energy supply systems and metering. The water supply system includes a total of 70 facilities that support an annual consumption of up to 2,000,000 m3 of water. The maximum pump throughput is 200 liters of water per second, which exceeds the capacity of the existing system. This means that, on average, water is pumped at 100 liters per second. To pump the water at this capacity, 3MW of power is required. zenon supports these operations with visualization and monitoring of water tanks, pumps and turbines as well as control of shut-off valves that restrict the water flow and the water level in the tanks. All facilities in the water supply system are autonomous and operators can monitor and control them from the control center, via touch screens or on their own computers via the zenon Web Pro Lite module.

FLEXIBLE SYSTEM, STANDARDIZED INTERFACES

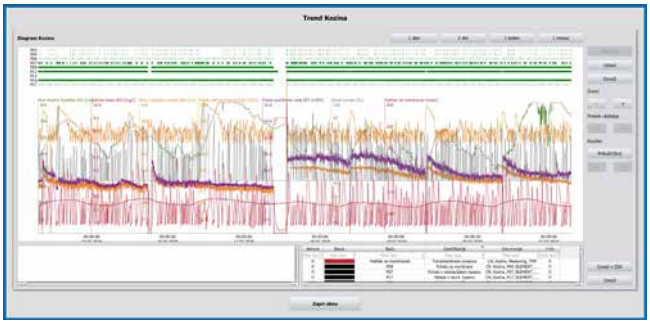
The decision to implement the zenon software platform was driven by the need for data security, intuitive interaction, real-time fault detection and automatic reporting on current and historical data in graphical and text formats. When choosing new software, the flexibility of zenon in terms of integration, including the fact that it supports many controllers and is independent from other equipment and system integrators, has been of exceptional importance. The goal of Kraški vodovod Sežana was to find a modern and open system with standardized interfaces offering the maximum level of adaptability.

The complete integration of zenon for was entrusted to Emrocon d. o. o., a local system integrator. This cooperation began in 2017, when the first concept of Kraški vodovod Sežana's water supply management using zenon technology was developed. When choosing the system integrator, Kraški vodovod Sežana paid particular attention to Emrocon's competence, familiarity with zenon technology, local presence and its flexibility in terms of both time and financial resources.

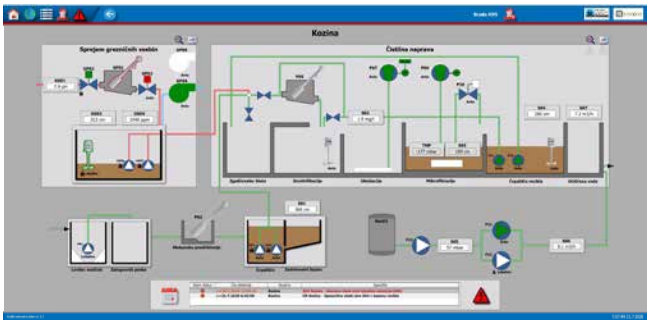
TIMELY DETECTION OF FAULTS, WATER LOSSES

"One of the reasons for introducing zenon is that it allows us to analyze any situation, detect water losses in a timely manner and quickly correct faults," says Borut Hočevar, head of the zenon control center at Kraški vodovod Sežana. All this is especially important in summertime, when water consumption is higher. When a fault is detected, Kraški vodovod Sežana has a maximum of four hours to repair it before it is noticed by consumers. zenon's intuitive nature means that the operator is provided with timely graphical and numerical alerts about any water loss between individual points in the system. In addition, it enables responsible persons to be notified via e-mail and text messages.

Thanks to the intuitive graphical elements on the zenon control system display, the operator quickly has a complete overview of the status of and changes in the water supply



Forecast for a given facility.



Overview of the waste water treatment facility.

system. One of the special features of the graphical display, as implemented at Kraški vodovod Sežana, is the discharge and filling rate indicator of the water reservoir. The indicator is connected to the alert system, which enables fast fault detection and rapid response to suboptimal conditions. Even at 20 percent, the perceptible differences between pumped and metered water in the water supply system are extremely small. "The main purpose of using the SCADA system is to detect the fault in the first place," says Borut Hočevar. Another zenon feature that contributes to this is the capability for fast communication between service personnel and operators via notes related to an individual facility.

The visualization also provides access to all technical drawings and notes whenever and wherever they are needed by the operator.

COST ANALYSES AND REPORTS

As well as a current status indicator, system operators can use the new system to perform more accurate analyses over longer time periods and make use of forecasts and diagrams. The system is set up in a way that enables future upgrades with predictive analytics to display deviations from the optimal operation of the water supply system.

The use of such a system enables Kraški vodovod Sežana to ensure a more competitive price for its drinking water for the consumers in the area. It also enables automatic data processing and the generation of weekly, monthly and annual reports the founding municipalities and for the state authority.

The previous management system did not provide such accurate monitoring. The improved performance made for a rapid return on investment from zenon. This rapid ROI led to the system being expanded to other parts of the public infrastructure.

THE HIGHEST LEVEL OF PUBLIC INFRASTRUCTURE SECURITY

At Kraški vodovod Sežana, system security and stability are of utmost importance. The supplier's IT infrastructure enables the future introduction of zenon system redundancy at two remote locations within the company. In addition to physical safety, the zenon software also ensures security through compliance with the relevant industry standards, zenon interfaces and the overall management approach. In larger facilities, it is possible to control the system via HMI interfaces that communicate directly with the controllers. At any time, it is also possible to manage the facility manually, via switches. In addition to the derived cost savings, zenon has helped to ensure the safety and stability of Kraški vodovod Sežana's operations.

DEPLOYING ZENON FOR OTHER INFRASTRUCTURE

Due to the exceptionally good results, Kraški vodovod Sežana is now introducing zenon to manage the sewerage system and

zenon is used for aggregation and analyzing of data as well as water supply control.

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>
> **PRIMOŽ TURŠIČ, GENERAL MANAGER, KRAŠKI VODOVOD SEŽANA**

the wastewater treatment system, as well as to control the consumption of energy and the status of metering points. In this way, all control systems will be combined into a single comprehensive management system based on the system-independent and flexible zenon platform.

This excellent management system helps the public utility company to be optimally managed. Importantly, it also ensures the influence of external factors can be minimized and that the high-quality and competitive services fully comply with user and stakeholder expectations. In this way, Kraški vodovod Sežana has ensured that the supply of this precious natural resource can now be taken for granted.

HIGHLIGHTS:

- Optimized overview of hydraulic information based on the WorldView module
- Automated and efficient reporting
- Simplified management based on standardized symbols, screens and connection colors
- Flexibility to connect the system to a variety of hardware thanks to zenon's wide array of drivers
- zenon modularity and scalability allow for the gradual construction of the system in multiple stages
- Easier adaptation of zenon to non-standard user preferences using plug-ins